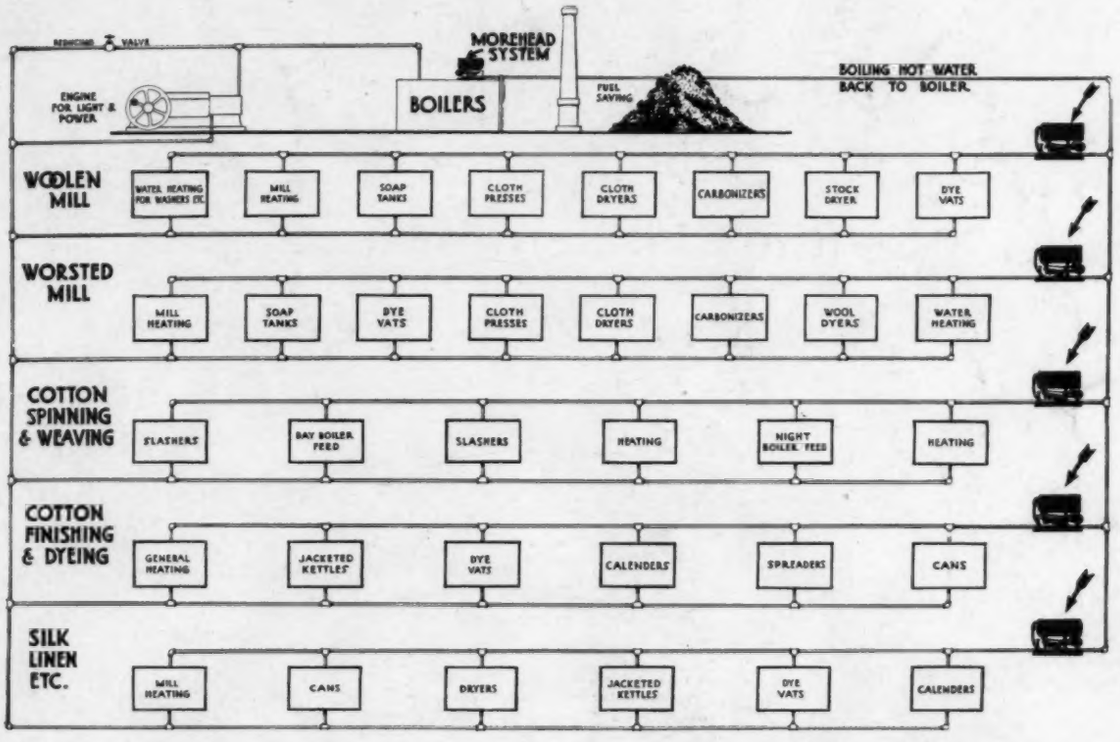
COTTON

Volume LXXXI
Number Five
Ten Cents a Copy

MARCH, 1917

Published Monthly by
W. R. C. Smith Publishing Co.
Dalton, and Atlanta, Ga.



The A. B. C. *of the* *Morehead* Back-to-Boiler SYSTEM

PUT CONDENSATION in your Profit instead of your Loss Account. While you cannot prevent condensation you can make it pay. A heat unit saved is a heat unit made, and every heat unit in your plant's condensation can be utilized to an advantage in favor of the coal pile if it is saved and returned to the boiler. The most direct, efficient and economical way to do this is to install the Morehead Back-to-Boiler System—the system which, in a large number of Textile Mills is actually saving from 10 to 25 per cent of the fuel formerly consumed—a system which comprises a line of steam traps adapted to every condition and requirement in the mill.

Write for catalog today.

Morehead Manufacturing Co.

Cotton Mill Dept.

Detroit, - - - Michigan

Table of Contents, page 35. Buyers' Index, page 172. Advertisers' Index, page 170

OUR RINGS

Set the Standard for Quality

THERE ARE NONE OTHERS

"JUST AS GOOD"

Mirror Spinning Rings
TRADE MARK REG. U.S. PAT. OFF.
Draper Corporation
Hopedale Mass.

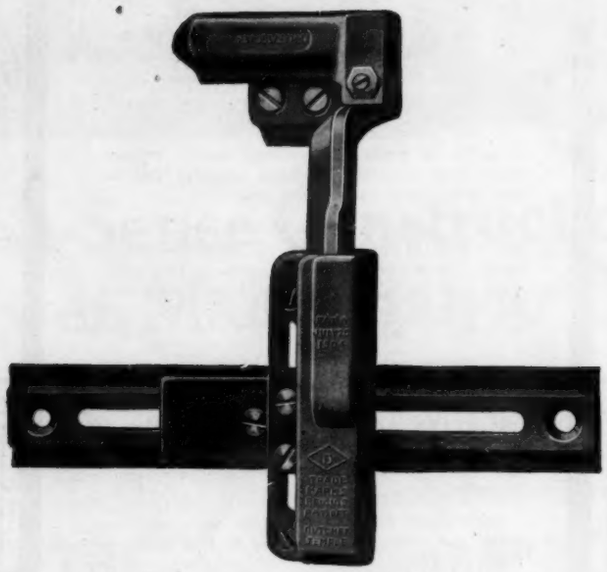
Southern Office

188 South Forsyth St. Atlanta Georgia.

Copyright 1916 by Draper Company

DUTCHER TEMPLES

Trade-Mark Reg. U. S. Pat. Off.



DRAPER CORPORATION

SOLE MANUFACTURERS

HOPEDALE MASSACHUSETTS

Southern Office
188 So. Forsyth St. Atanta Georgia

Copyright 1916 by Draper Company

"DIXIELITE"

TRADE MARK REG. U.S. PAT. OFFICE

Snowy White Walls

And Ceilings That Stay White

Without a doubt the greatest factor in mill efficiency is Light—daylight is the best of all. It is surprising the amount of light absorbed by dirty walls and ceilings.

A mill never made a better investment than to make its walls and ceilings snowy white—make them take the daylight, magnify and reflect it to every part of the room.

You'll probably be repainting soon. You don't wish to spend money for white paint that turns yellow, or cracks or peels. You don't want a white paint made of lead, oil and varnish—it collects dirt easily and has an annoying tendency to flake off.

It always pays in the long run to buy the best The white paint you put on your walls should have a snowy-white, light reflecting surface that STAYS WHITE. That's why you should demand "DIXIELITE" Enamel. It's washable, and only one coat is needed on surfaces previously coated.

On Cement or Brick surfaces use Bay State Brick and Cement Coating as a first coat for "DIXIELITE."

When you start your repainting, demand "DIXIELITE" from your painting contractor.

Send for Sample Panel Today

Wadsworth, Howland & Co., Inc.

139-141 Federal St., Boston, Mass.

Makers of Bay State Brick and Cement Coating

BAY STATE

ONE GALLON
WADSWORTH HOWLAND & CO.
INCORPORATED
BOSTON, MASS.
DIXIELITE
ENAMEL

Common-Sense Construction Brings Lower Maintenance Costs

YOUR first impression of the Hall truck will be its utter simplicity of design —the unusual accessibility—and the absence of complicated parts.

These are some of the factors which explain the lower operating expense—lower maintenance costs—and general all around dependability of

THE HALL TRUCK
2-3½-5 TON

Special Bodies to fit your Own Conditions Designed by Our Engineers

Go to the HALL dealer and tell him you want to see what stands back of the superior Hall performance. Ask him to show you the powerful Continental Motor which sends the heaviest loads through the hardships of the roughest going—the Timken axles that insure against danger of breakdowns—and the sturdy chassis frame forged and machined right in our own steel works.

Then allow him to show you what the Hall will accomplish for you on your own haulage problem—keep careful records—make comparisons—and select your equipment strictly according to the results.

If there is no Hall dealer in your city write for complete catalog. Address

LEWIS-HALL IRON WORKS

Mfrs. of the Hall Truck.

DETROIT, MICHIGAN

Established 1873

Pinnacle Rubber Belt for Cotton Mills

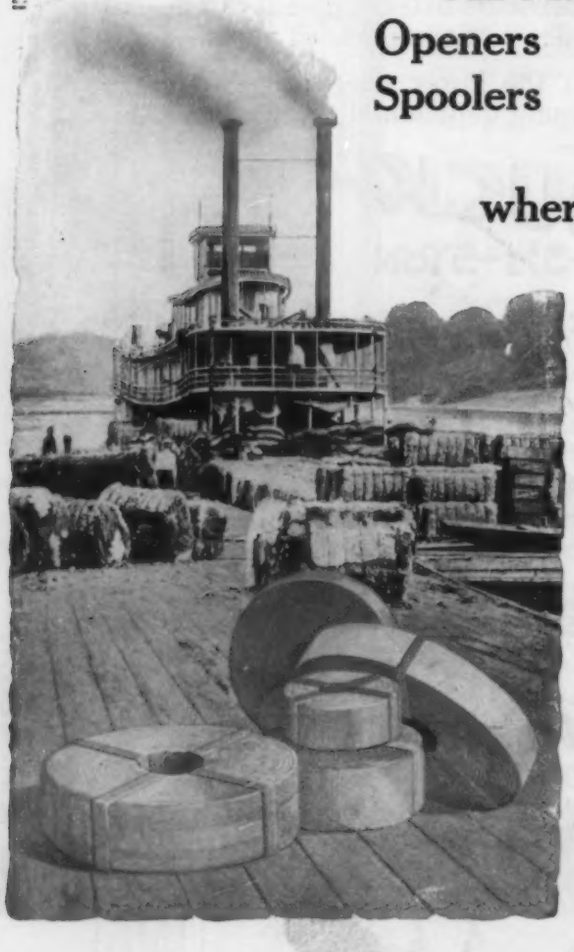
Made of stretched fabric supersaturated with a particularly fine quality of rubber friction. Sudden shocks and abusive strains are absorbed by the elastic rubber. Belts so made lose all characteristics of fabric or duck and at the same time have a pliability not found in leather.

Recommended for—

All Main and Countershaft Drives

Openers Breakers Cards
Spoolers Warpers Slashers

and Heavy Looms
where friction drives are used



Goodrich Pinnacle Belt will give very satisfactory service on these drives at an operating cost far below that for leather.

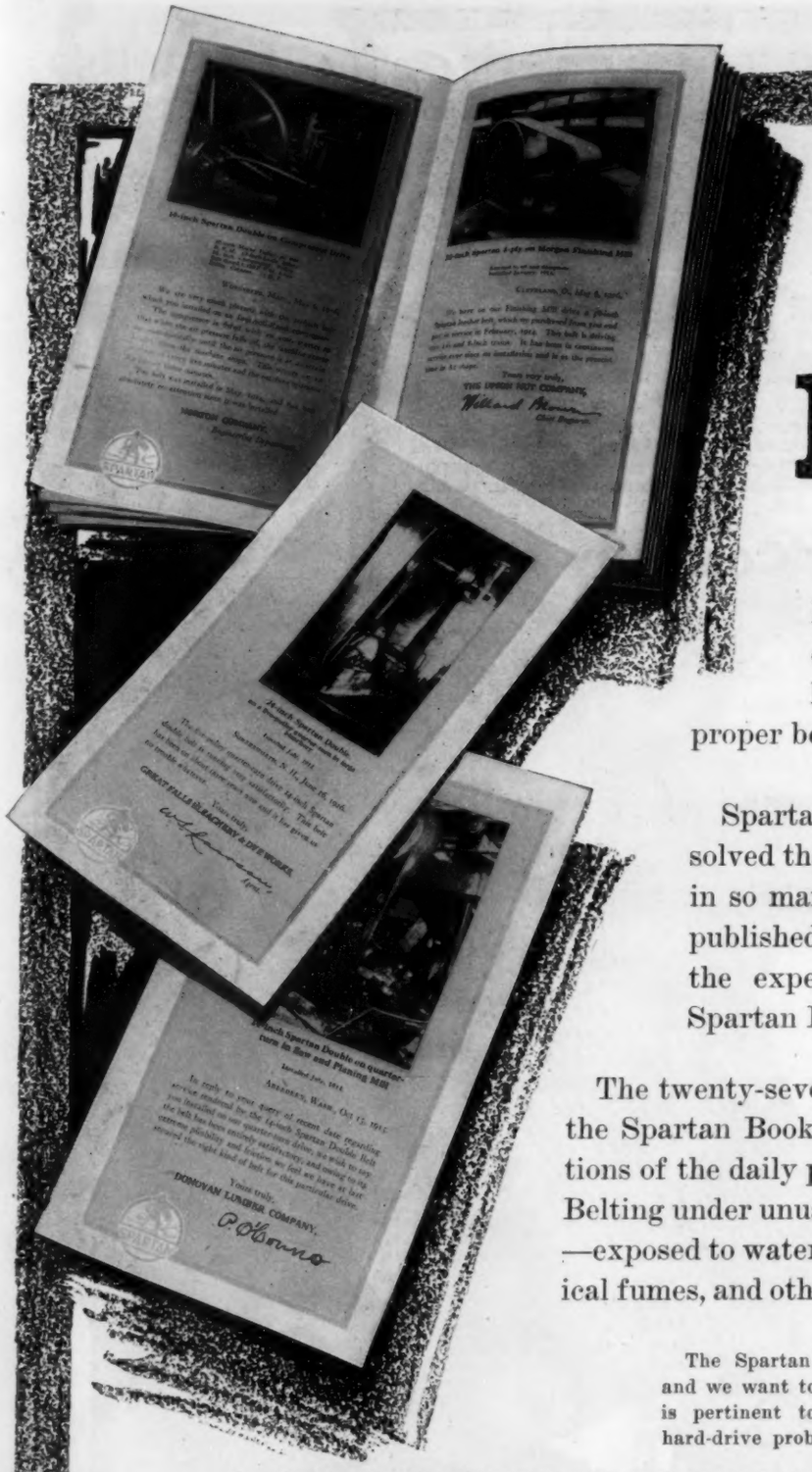
Pinnacle is not a *cure-all* and is not recommended where frequent shifting is necessary. We are just as strongly against using Pinnacle on spinning and roving frames, looms with automatic shifters, etc., as we are for its universal use on drives such as those mentioned above.

Use Pinnacle—the belt that is 2-3 cotton—at a cost of less than 40% of the cost of leather on fully 80% of all cotton mill drives.

Write for samples today

The B. F. Goodrich Company
Factories: Akron, Ohio
Branches and Distributors in All Districts
Makers of celebrated Goodrich Automobile Tires—*"Best in the Long Run"*

2/3 Cotton



27 Hard Drives

The solution of the hard-drive problems in every plant depends largely upon the use of proper belting equipment.

Spartan Leather Belting has solved these hard-drive problems in so many plants that we have published a booklet,—a record of the experience of others with Spartan Belting.

The twenty-seven hard drives shown in the Spartan Booklet are typical illustrations of the daily performance of Spartan Belting under unusually severe conditions —exposed to water, steam, oil, heat, chemical fumes, and other destructive agencies.

The Spartan Book will interest you and we want to send a copy because it is pertinent to the solution of your hard-drive problems. May we send it?

THE GRATON & KNIGHT MFG. CO.

Leather Tanners and Belt Makers

WORCESTER, MASS., U.S.A.

BRANCHES

Atlanta	Detroit	New Orleans	Portland, Ore.
Boston	Fall River	New York	St. Louis
Cleveland	Kansas City	Philadelphia	Seattle
Chicago	Minneapolis	Pittsburgh	Leicester, England

1851 G&K TRADE MARKS REG. U.S. PAT. OFF.

SELLING AGENTS

Graton & Knight Mfg. Co. of Texas, Dallas, Texas.
Graton & Knight Mfg. Co. of Wisconsin, Milwaukee, Wis.
Graton & Knight Mfg. Co. of California, San Francisco, Cal.

POSITIVE DRIVES

THERE can be no slip in the Link-Belt Silent Chain Drive—the chain meshes into the gear, engaging more teeth than in a gear drive, as may be seen by the illustration. All the power of the driver reaches the driven wheel, pulling the load with unyielding, yet resilient force.

LINK-BELT
SILENT CHAIN DRIVES

are operating every conceivable kind of machinery. The drive is Flexible as a Belt—Positive as a Gear—More Efficient than Either. The success of Link-Belt Silent Chain is due to its patented Pin-Bushed-Joint construction—a round pin and two case-hardened semi-circular bushings—found in no other chain. Write for 112-page price list Data Book No. 125.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York . . 299 Broadway
Boston . . . 49 Federal St.
Pittsburgh . . 1501 Park Bldg.
St. Louis, Central Nat'l Bank Bldg.
Buffalo . 698 Ellicott Square
Cleveland 1804 Rockefeller Bldg.
Detroit . 732 Dime Bank Bldg.
Wilkes-Barre, 2nd Nat'l Bank Bldg.
Minneapolis . 418 So. Third St.
Louisville, F. Wehle, Starks Bldg.
Seattle . . 580 First Ave., S.
Portland, Ore., 14th & Lovejoy Sts.
Toronto, Canadian Link-Belt Co., Ltd.

Knoxville, Empire Bldg.
Birmingham, D. T. Blakey, 309 Am. Trust Bldg.
Los Angeles, 161 N. Los Angeles St.
Denver, Lindrooth, Shubart & Co., Boston Bldg.
San Francisco, 461 Market Street.
New Orleans, Whitney Supply Co., 418 So. Peters St.
Charlotte, N.C., J. S. Cothran, Commercial Bank Bldg.

Read what one user thinks of Link-Belt Silent Chain:

THE INTERWOVEN MILLS, INC.

Martinsburg, W. Va., Dec. 9, 1916.

Link-Belt Company,
Philadelphia, Pa.

Dear Sirs:—Regarding the Silent Chain Drives furnished by your company, we use these drives, I may say, to the exclusion of all others, where anything like a belt is needed throughout our entire plant, and they have at all times proved very satisfactory.

Most of them have run several years with practically no expense for upkeep, and without noise or annoyance of any kind.

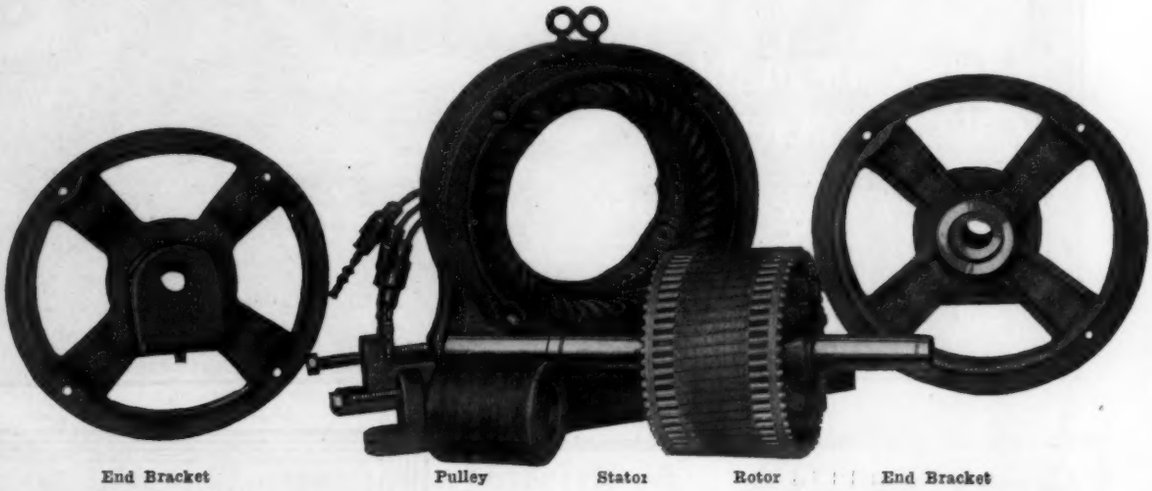
The positiveness of the drive, also, we find tends to increase production at least 10 per cent.

Very truly yours,
C. W. Kilbourn, President.
THE INTERWOVEN MILLS, Inc.

LINCOLN MOTORS

Simplicity

Any workman who can operate paper machinery can understand and care for a Lincoln Motor.



End Bracket Pulley Stator Rotor End Bracket

The illustration shows the complete working parts.

The Stator or frame containing the electrical windings.

The Rotor mounted on a steel shaft and arranged to revolve inside the stator.

The End Brackets which are bolted to the frame and which carry the bearings for the rotor shaft.

There is no exposed part of the motor from which it is possible to receive electrical injury or shock.

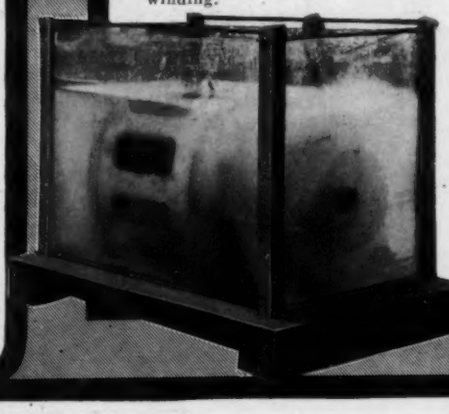
There are no moving parts except the rotor, nothing to wear out except the bearings which are easily and cheaply renewed.

Lincoln Motors demand no care outside of an occasional filling of the oil wells. With this attention they will run for years in spite of water, steam, dust or other trying conditions.

Equip your machinery with simple, trouble proof Lincoln Motors.

Ask for Bulletin on Motors 101-N.

A Standard Lincoln Motor has been operated under water for over three years without damage to winding.



"Link Up With Lincoln"

The Lincoln Electric Co.

CLEVELAND, OHIO.

New York City Singer Bldg.	Chicago	Philadelphia
Buffalo	Columbus	Pittsburg
Syracuse	Detroit	Toronto, Canada
	Grand Rapids	Charlotte, N. C.

Agencies in other principal cities.

ELECTRIC DAYLIGHT WITH Western Electric DAVIS FLOOD LAMPS

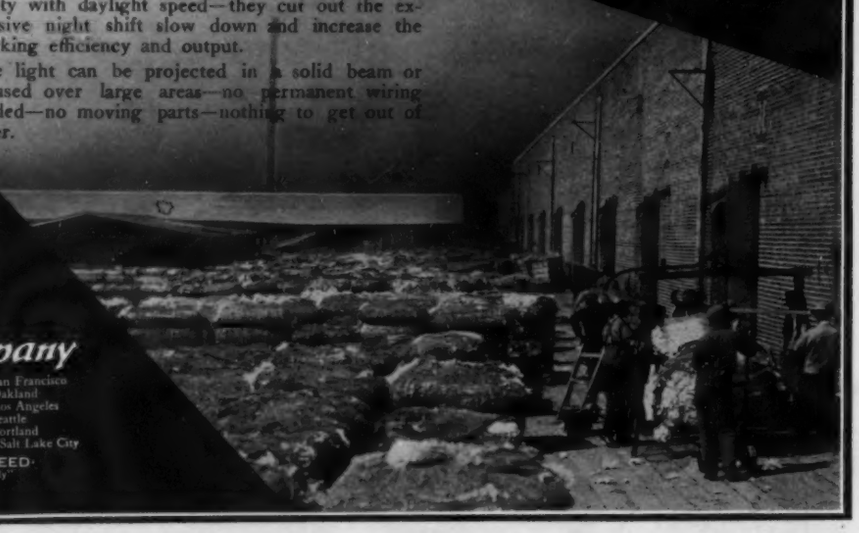
Indoors or Out-of-Doors

The light that lights Niagara

These lamps will produce a bright, glareless light that turns night into day.

They give your night force a chance to work in safety with daylight speed—they cut out the expensive night shift slow down and increase the working efficiency and output.

The light can be projected in a solid beam or diffused over large areas—no permanent wiring needed—no moving parts—nothing to get out of order.



Write for Folder FL-34 and tell us your night lighting problems

Western Electric Company
INCORPORATED

New York	Atlanta	Chicago	Kansas City	San Francisco
Buffalo	Richmond	Milwaukee	St. Louis	Oakland
Newark	Savannah	Indianapolis	Dallas	Los Angeles
Philadelphia	New Orleans	Detroit	Houston	Seattle
Boston	Birmingham	Cleveland	Oklahoma City	Portland

Pittsburgh Cincinnati Minneapolis St. Paul Omaha Denver Salt Lake City

EQUIPMENT FOR EVERY ELECTRICAL NEED
Member Society for Electrical Development. "Do it Electrically"

Greater Efficiency—
Lower Operating Costs—
Increased Output—

These are Possible in *Your Mill.*

Replace your old mechanical drive with

Allis-Chalmers Textile Motors.

Using these motors

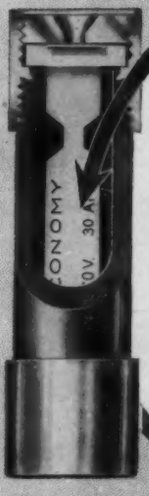
- ¶ The power may be applied more directly to the work.
- ¶ Higher operating speeds are possible.
- ¶ More regular speeds, with smoother running work, are obtained.
- ¶ Slipping of belts and tortional spring in shafting are eliminated.
- ¶ Greater flexibility of operation and arrangement are secured.

Allis-Chalmers Manufacturing Co.

Motors for all Drives.

MILWAUKEE, WISCONSIN

CANADIAN REPRESENTATIVES:
Canadian Allis-Chalmers Ltd., Toronto, Canada.



The Heart of an
ECONOMY
renewable cartridge
FUSE

is the "Drop Out" Renewal Link. It is the only thing you have to replace in order to renew a blown ECONOMY FUSE. The expense is trifling, compared to the utter extravagance of discarding an entire fuse after it has operated.

Use Economy Fuses in your plant and by their use cut yearly fuse maintenance bills a full 80 per cent.

Write for free Samples. Test them. Let the results speak for the economy and safety of Economy Fuses. Be sure to ask for Catalog 39.

Economy Fuse & Mfg. Co.
Kinzie and Orleans Sts.,
CHICAGO.
At Leading Jobbers.

Westinghouse

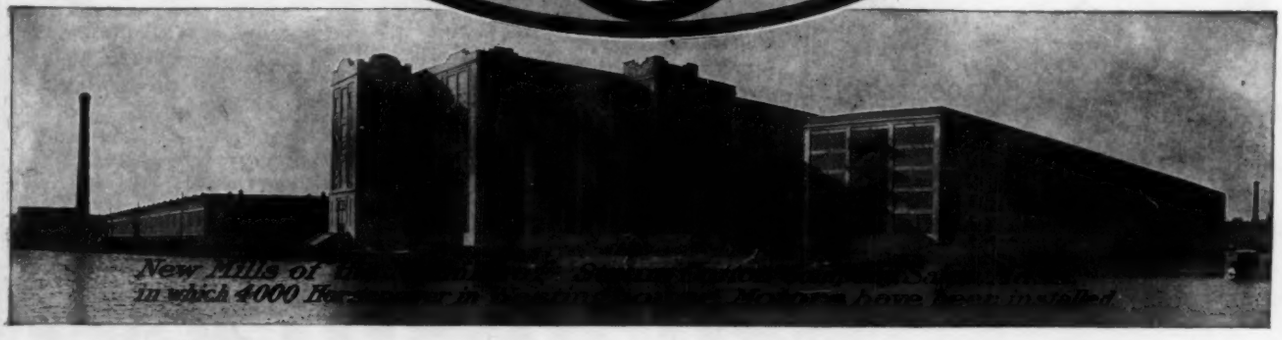
Complete Electrical Equipment for Textile Mills

Electricity is the best form of power for your mill. It is the most economic; Increases production; Improves quality; and betters working conditions.

Westinghouse Experts are prepared to give you the benefit of their experience in equipping your mill from steam supply to the driven machine.

Westinghouse Electric & Manufacturing Co.

East Pittsburgh, Pa.



60,000 ELECTRIC MOTORS
TOTALING
850,000 HORSE POWER—

Represent the Recognition by the Textile Industry of the Advantages of Electric Power

These are days of **easy money** in the Textile world, but keener competition and more difficult market conditions are predicted for the quite near future.

Purchased Electric Power Service means a **greater production** of a **superior product.**

Purchased Electric Power Service facilitates either **efficient expansion** or **successful retrenchment**

These are the factors that will determine your place in the Textile world when market and competitive conditions are difficult.

Without obligation on your part, our Sales Department will gladly furnish equipment specifications and estimates of cost.

Central Georgia Power Co.

Macon, Ga.

Service available in the following cities:

Macon	**Thomaston**	**Jonesboro**
Forsyth	**Griffin**	**Jackson**
Barnesville	**Hampton**	**Monticello**

The Choice of a Stoker Always Narrows down to -

-A Study of Plant Requirements

W WESTINGHOUSE ELECTRIC

This Time Underfeed:

"Ah, back again," said the Sales Manager to Sam, the Stoker Expert, upon his return from York, Pa.

"Yes, and do you know I hated to leave that clean little town with its quaint way. But I must say that that stoker job was an interesting one. Combination steam and hydroelectric plant. Remember our installation of twelve 7-Retorts down at Minneapolis?"

"Yes, Sam."

"Well, it sold this job. Conditions practically the same—steam plant to act as a standby, with fires banked, ready in case of accident or otherwise to take the entire load of the water power station in less than nine minutes. You can see that this requires a stoker of extraordinary overload capacity, and one which can rise to the emergency INSTANTLY. And I know of no stoker, of any type, that is more responsive than the Westinghouse Underfeed. Personally I have seen our stoker jump from a banked fire to 480% load in less than eight minutes."

"Well Sam, it was plainly a case of Underfeed."

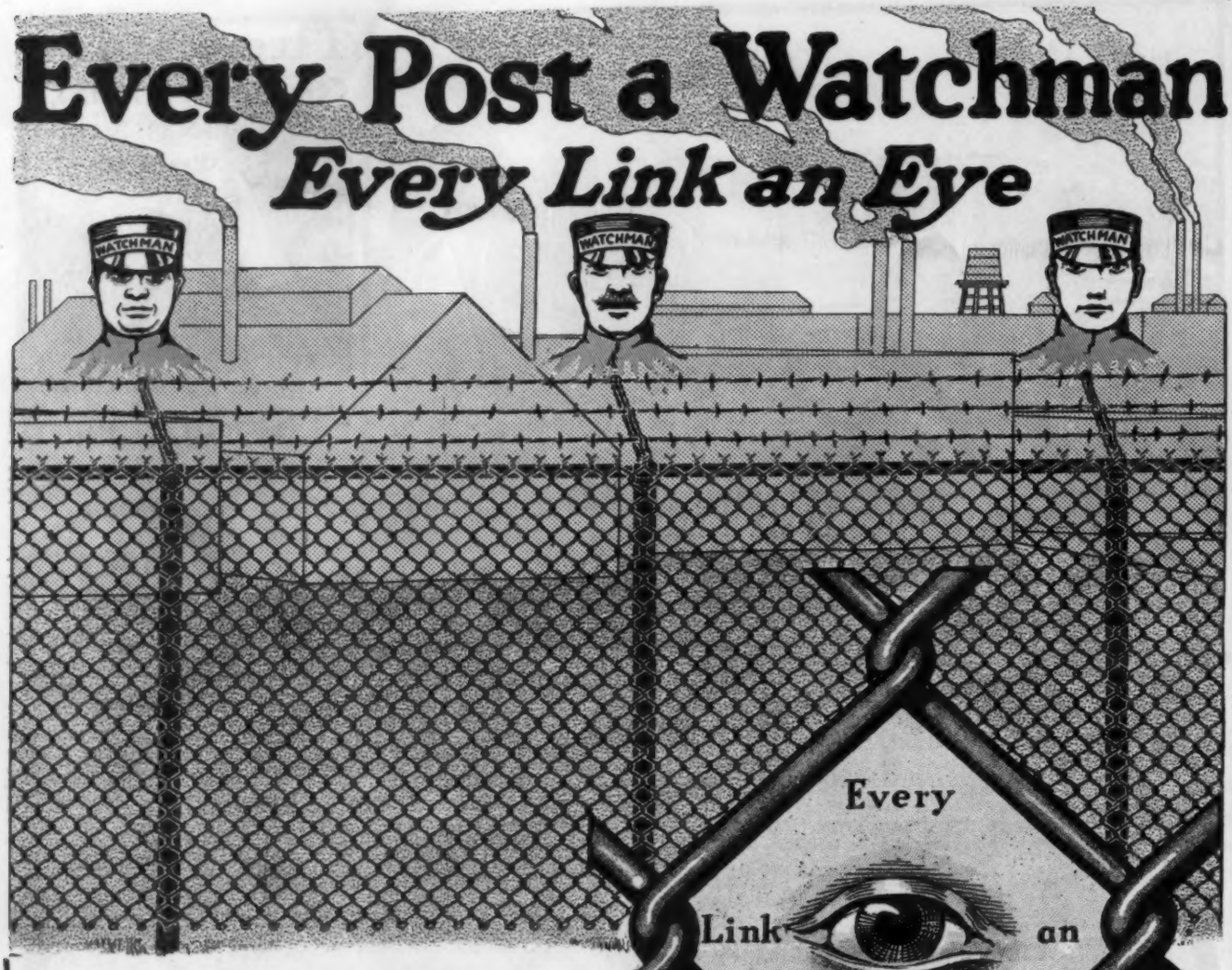
"Yes, and I know that this customer will be as satisfied with the Westinghouse Underfeeds as our Minneapolis friends."

Write for Stoker Circular No. 1559.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

Westinghouse

Every Post a Watchman
Every Link an Eye



CYCLONE
PROPERTY PROTECTION FENCINC PAYS

It surrounds your factory property with a cordon of sturdy watchmen, ever vigilant, and with a million eyes that never close.

ONE WATCHMAN TAKES THE PLACE OF TWENTY

John Bjorn, Supt., The Nash Motors Co., Kenosha, Wis., writes:

"Prior to the building of Cyclone Fence around our factory we were employing twenty watchmen, while, since the fence has been built, we have been able to reduce the number to one. We also wish to advise you of our entire satisfaction with the manner in which you executed the contract for the erection of the fence."

The foregoing letter from the Nash Motors Company confirms Cyclone Fence economy. If paid $2.50 per day, the dispensing with nineteen watchmen means a saving of $17,337.50 annually.

Cyclone Property Protection Fencing is the recognized "last word" in factory security, adopted by many factory owners with uniform satisfaction.

We build Cyclone Fence in all practical heights, with swinging or sliding gates for alleys, switch tracks, driveways, etc.

Our engineers will consult with you to devise a system of protection that will meet your particular needs. Construction superintendent furnished at nominal cost.

Illustrated catalog showing various designs sent on request.

CYCLONE FENCE COMPANY

WAUKEGAN **Dept. 134** **ILLINOIS.**

CYCLONE FENCE

forms a continuous chain link, woven steel barrier around your property—non-climbable, shock resisting, enduring. Fabric of best quality steel wire specially drawn for the manufacture of this fence, heavily galvanized. Posts of heavy tubular steel—have equal resisting power on all sides against shock or strains, or the action of weather.

"Very soon pay for the cost of the scale"

THE AUGUSTA FACTORY.

Augusta, Ga. Oct. 16, 1916

Toledo Scales Co.
Toledo, O.

Gentlemen:—

The dial scale recently installed by your firm in our cloth room is proving itself perfectly satisfactory in every respect. We will very soon pay for the cost of the scale in shortage in weight alone. Merely as a matter of curiosity we had this scale tested from fifty to one thousand pounds inclusive and they broke perfectly at each fifty pounds on the dial. This test was made by the official sealer of weights and measures of the City of Augusta.

It gives us pleasure to say that for commercial accuracy they are superior to anything we have ever used.

Yours very truly,

THE BIG saving due to accuracy prompted The Augusta Factory to make a thorough test of Toledo Scales. Their letter above tells the story. Textile manufacturers are beginning to realize the actual loss caused by inaccurate and time-wasting methods of weighing. The progressive mills are discarding the old-style beam scale and adopting the "accurate weight at at a glance"

TOLEDO SCALES

They save time because the big, easily read dial shows the weight at a glance, and four bales or laps can be weighed in the same time it took to weigh one on old-style scales. They have been proven accurate to the highest possible degree by weight officials all over the country. Another feature is that a special equalizing bar and double pendulum renders them absolutely accurate when slightly out of level.

Toledo Scales are being used in scores of the big Southern mills such as Poe Mfg. Co., Gray Mfg. Co., Franklin Mills, Cannon Mills, and many others.

There is a Toledo Scale for every textile use—portable, hanging lap scales, dormant platform scales, etc.

Write today for leaflet "How Textile Mills Weigh Their Products." It's interesting and will prove of value to you.

TOLEDO Dormant. Many styles, sizes of platform, and capacities.

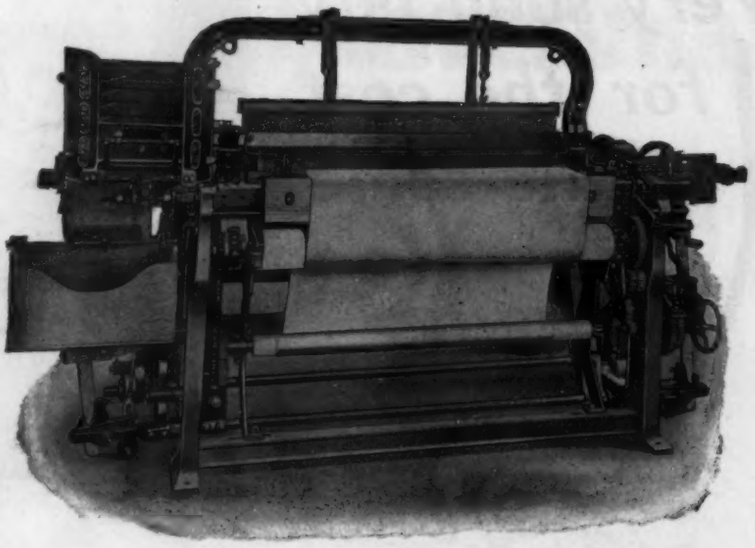
TOLEDO SCALE CO.

3308 Monroe St. TOLEDO, O.

Canadian Factory—Windsor, Ontario.
Branch Offices and Service Stations in All Large Cities.

THE "IDEAL" Automatic Loom stands for low operating cost and high quality of fabrics.

It has the widest scope of any automatic loom and can be easily changed over from one fabric to another.



And remember that while saving 50% to 60% in weaving costs for you the weavers can earn from 40% to 50% more wages.

Write for our illustrated catalog.

"IDEAL"

The Stafford Company

Readville, Mass.

Fred H. White, Southern Agent, Charlotte, N. C.

"IDEAL"

42 YEARS EXPERIENCE

1873 1915

DIAMOND FINISH

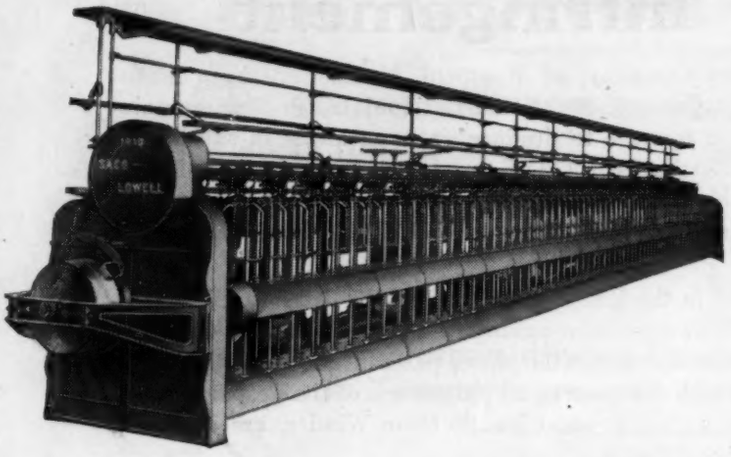
Spinning Rings
Twister Rings
Silk Rings
Traveller Cleaners
Traveller Cups
Guide Wire Sets

WHITINSVILLE SPINNING RING CO
WHITINSVILLE, MASS.

SACO-LOWELL SHOPS

TEXTILE MACHINERY

INCLUDING



ROVING FRAMES
OF
IMPROVED DESIGN
AND
CONSTRUCTION
SLUBBER FRAMES
INTERMEDIATES
FINE FRAMES AND
JACK FRAMES

SHOPS

BIDDEFORD, ME. LOWELL, MASS. NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES

BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

CROMPTON & KNOWLES LOOM WORKS

LOOMS

WORCESTER, MASS.

PROVIDENCE, R. I. PHILADELPHIA, PA.

Alexander & Garsed, Charlotte, N. C., Southern Representatives.

Trade Notice of Suit For Infringement

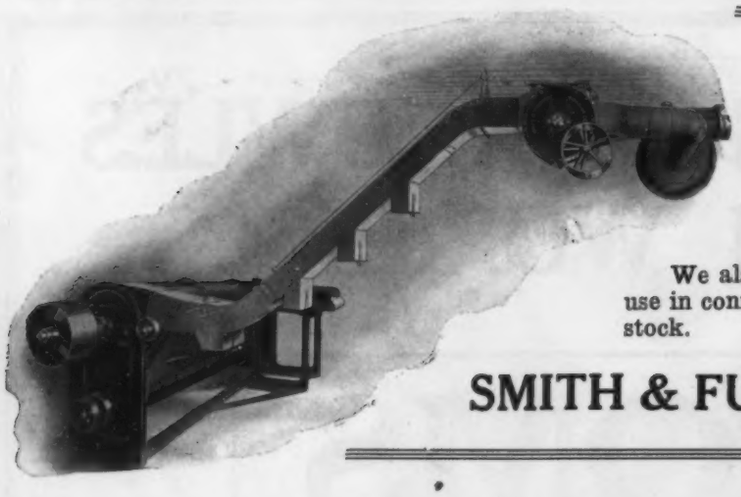
For some time, the Foster Machine Company, of Westfield, Mass., have been manufacturing and marketing cone winding machinery of the frictional driven type, containing certain mechanical elements which operate to produce yarn packages in substantial imitation of the original INCREASED TAPER CONE produced by the CAMLESS winder. Both the machine and the package it produces are deemed to infringe my United States patents No. 747404 and No. 766175, issued for WINDING MACHINES and YARN PACKAGES respectively.

I therefore have caused to be filed in the UNITED STATES DISTRICT COURT, DISTRICT OF MASSACHUSETTS, a bill of complaint against the Foster Machine Company for infringement of the rights granted me under the above patents, and until the rights in this suit have been fully established by the courts, all purchasers of the Foster Machine Company's products, as represented by their model No. 30 Cone Winder, are incurring the risk of being held accountable.

Respectfully submitted,

G. W. Foster.

No. 401 Wayland Ave.,
Providence, R. I.



Cleaning Outfit for Cotton Waste

Send for Circular S 9.

This outfit will open and clean all kinds of Cotton Waste, such as sweeps, fly or strips, removing the dirt and dust, also nails, straws, ring travelers, etc.

We also build the Shaughnessy Waste Reclaimer for use in connection with the above, for recovering spinning stock.

Send for Circular S 90.

SMITH & FURBUSH MACHINE CO.,

PHILADELPHIA, PA.

"SONOCO" Spiral-Wound Straw Board TUBES

for winding cloth or warping, thus affording protection from rusty or greasy mandrels. Short freight hauls. Superior Tubes.

Southern Novelty Co., Hartsville, S. C.

Cramer System
OF
Air Conditioning

AN EQUIPMENT FOR EVERY REQUIREMENT

Warm Air in Winter
Cool Air in Summer
Moist Air When Needed
Dry Air if Desired

AUTOMATICALLY CONTROLLED ALL THE TIME

Central Station Systems
Fan Air Conditioners
Spray Humidifiers
Ejector Humidifiers
Dehumidifying Equipment
Automatic Temperature and Humidity Controllers

Write for Instructive Literature.

Stuart W. Cramer

New York CHARLOTTE, N. C. Boston

B. S. Roy & Son Co.

Est. 1868

GRINDERS

The only firm in the world exclusively devoted to building and improving grinding machinery for textile mills.

FOR

Woolen and Cotton Cards

Garnets Shears, Nappers and Calender Rolls

Write for prices on your needs

Worcester, Mass.

Woolen Cards

Waste Cards

Ring Spinning Frames

System: G. Josephy's Erben

Asbestos and Flax Machinery a Specialty

Write for prices and particulars direct to the manufacturers.

Lehnert Textile Machinery Company

53 State Street

BOSTON, MASS.

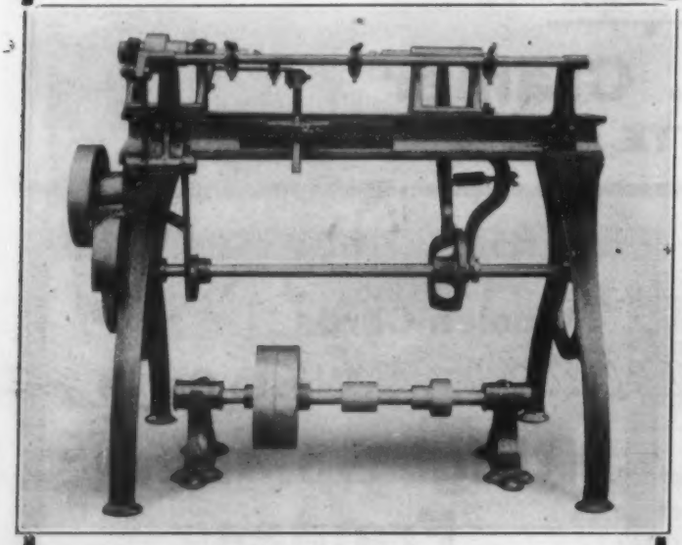
PAINT YOUR OWN BOBBINS
Two Big Reasons

1. An occasional coat of paint or shellac on your bobbins and spools is an investment that will pay good returns. These small but important parts are often overlooked, with the result that time and material are wasted and extra motions are required of operatives to keep up ends on rough and splintered bobbins.

But do your own painting. Don't pay out your good money to the bobbin manufacturers for painting or repainting. Many mills are buying their bobbins and spools unpainted, and saving at least 75% by doing their own painting.

2. Many mills are adopting the color plan for identifying different grades or sizes of yarn or warp, or for distinguishing carded and combed yarn, by using bobbins and spools painted different colors. One mill paints the ends of the bobbins, with the result that if a mistake is made in selecting the wrong bobbin, it would be brought to the attention of the operative or overseer as soon as it was put on the machine.

This plan has many other advantages, but it's too expensive to have the bobbins and spools painted outside or by the bobbin manufacturers.



The J. E. Lock Bobbin Painting Machine

is a paying investment for any mill. Any class of bobbins or spools, quills, twisters, triptods, etc., can be painted on this machine at a speed of 30 per minute, all of them painted exactly uniformly and with no waste of paint. The cost of operation and supplies allows a big saving over the prices charged for painting by the bobbin manufacturers. Any boy or girl can operate it.

This machine is used by all the big bobbin manufacturers. It pays them, and it will pay you. It is now being used in the largest cotton, woolen and silk mills in the country. More and more mill men are realizing its advantages in their mill.

It will pay you to look into this painting proposition, and full information and prices will be sent you gladly. Drop us a line today.

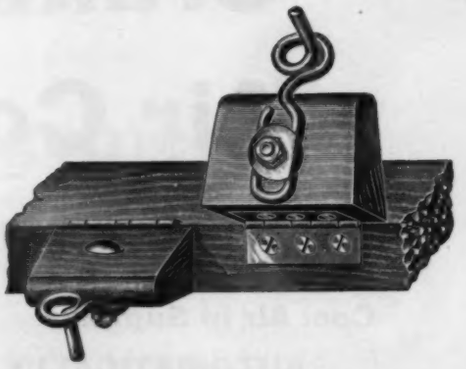
We carry a complete line of Bobbins and Skewers. When in the market let us quote you.

BLANDIN COMPANY

Lawrence, Mass.

Southern Agent, F. R. CHADWICK, Charlotte, N. C.

The Palmer Adjustable Thread Guide



For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

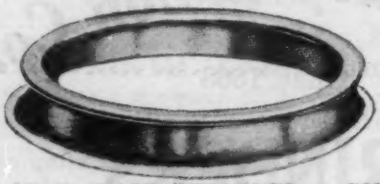
Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut.

REMEMBER



When changing to a larger or smaller size Ring, that we can SAVE YOU the EXPENSE of buying new holders by FURNISHING YOU a RING with the BASE EXPANDED or CONTRACTED to FIT YOUR PRESENT HOLDERS.

SOUTHERN SPINDLE & FLYER CO., Inc.

CHARLOTTE, N. C.

W. H. Monty, Pres. & Treas.

W. H. Hutchins, V-Pres. & Sect'y.

Schofield Patent Automatic Opener and Duster.

For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.

"Schofield" intermediate feeds for Cards, Wool, Rag, Waste, Hair and Lumper Pickers, Automatic, Cone and Oldham Willows, Rag and Extract Dusters, Waste Pullers, Blamaine Lap Feeds, Curled Hair Pickers, Needle Looms, etc.

WILLIAM SCHOFIELD COMPANY

Iron Founders, Textile Machinery Builders.

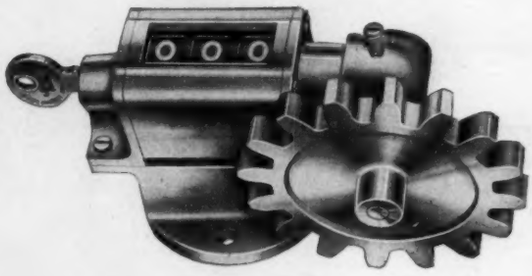
Krams Ave., Manayunk, Philadelphia, Pa.

Try Them Thirty Days at Our Expense

To prove to you that Veeder Counters will increase your loom production, reduce the cost of weaving per yard, and increase the efficiency of your mill we will send you either of the counters illustrated on 30 days free trial. If the counters illustrated are not suitable to your requirements write us as we make counters for practically every possible purpose where a count is desired.

Loom Pick Counter

Loom Yardage Counter.



Our free textile booklet gives much interesting information. Yours for the asking.

THE VEEDER MANUFACTURING CO.

Speed Counters
Lineal Measuring Counters

6 Sargeant St., HARTFORD, CONN., U. S. A.
MAKERS OF
Cyclometers for Bicycles and Motorcycles, Odometers for Automobiles and Horse Drawn Vehicles, Tachometers, Tachodometers, and Fine Die Castings.

Hank Counters
Thread Measuring Counters

ROOT COUNTERS

"The Business Speedometers."

When It's Made— It's Counted

More and more textile machinery manufacturers are seeing the light and announce that in future their machines will be fitted with Root Automatic Counters as part of their standard equipment. They know the small initial cost is quickly absorbed in the lower cost to sell, besides the added satisfaction and appreciation of their customers. Buyers are already predisposed towards your output if they know you are supplying Root Counters.

They can easily be attached by any competent mechanic to looms and all kinds of textile and general automatic machinery. They eliminate the tedious labor of hand-counting and really speed-up the work, because each workman knows at all times just what he and his neighbors are doing. **Competition is the life of production.**

Why not be the first to get in line on this new idea? Why not get the "cream" of the business before competitors are alive to it? Investigate and you will surely invest in Root Counters. **They Never Forget.** *Send for catalogue.*

The C. J. Root Company, 200 Johnson St., Bristol, Conn.

The Switch-Engine Principle

Saves Time and Money on Interior Trucking

A Great waste of time and labor is immediately eliminated in any mill when

NATIONAL ELEVATING ROLLER BEARING TRUCKS CHAPMAN

are installed. This truck is the indoor brother of the freight-yard engine. It carries the load to the machines on a detached platform, sets the platform on the floor convenient to the operator's hands. With a down-push of the handle it picks up a platform loaded with newly finished goods and is immediately hauling again. The trucker has little more handling to do than does the engineer in the cab of a freight-yard switch-engine.

Plain platforms or crates and boxes can be used on this truck—any sort of carriers that will serve to prevent wasted motion.

The National-Chapman—the switch-engine truck—not only embodies a vital principle of money saving, interior trucking efficiency, but it also embodies, in itself, principles of mechanical superiority which make it well-nigh imperative—for the manufacturer who desires to get the most out of his trucks—to investigate.

Full particulars regarding National-Chapman Elevating Trucks and our complete Illustrated Catalog C. B. on request.

National Scale Company

3 Bank Street, Chicopee Falls, Mass

Also Manufacturers of National Counting Machines.

Hyatt Roller Bearings Used Exclusively in All Trucks.

SAFETY!! EFFICIENCY!! ECONOMY!! CONSERVATION!!

PREPAREDNESS!!

''In Time of Peace Prepare for War''

Monthly, weekly, daily, hourly and every minute, a worn cam not only causes bad production and loses money for the mill and the weaver, but it injures the gears, belts and picker-sticks. The strain and shock cause lost motion, wear, breakage and repair bills for other working parts of the loom, a waste in supplies, and losses in production when the loom stops to replace the broken parts. $ $ $ $ $ $ $ $ $

Our Device protects the cam $ Dissipates shock $ Prevents lost motion $ Counter-balances the shaft $ Makes the loom run smooth and steady $ Insures the loom against stoppages $ Avoids delays and worries $ Saves power, time and labor $ Subtracts dollars from repair charges $ Benefits the stockholder and pleases the weaver. $ $ $ $

It is the practice of successful mill men to equip all their cams with our device and eliminate once for all cam troubles and their consequences. It is a paying investment and its use bespeaks competent and efficient management. The best mill men will tell you that it is ''highly satisfactory'' and that they ''would not be without it.'' What has proved a benefit to others should be of interest to you. If you are skeptical, ask us for the evidence.

Numerous mills, after receiving shipments and thoroughly testing have ordered full equipment for the entire plant. The demand is steadily increasing. If you want prompt shipment, send in your order at once.

IN PEACE OR WAR——BE PREPARED!

In time of peace, satisfaction is the test. In time of war, when machine shops and foundries are taxed to capacity making munitions, your looms may be put out of commission by breakage which our cam devices could have prevented.

Equip all your cams with our device. Others are doing it. DON'T DELAY—DO IT NOW!

CLINTON CAM COMPANY, CLINTON, S. C.

Necessaries for the Mill and Shipping Department

CARY'S EVERLASTING FLEXIBLE STEEL MAT

Has a Scraping Surface in Every Direction.
Practically Indestructible.

Rust-Proof Reinforced Edges

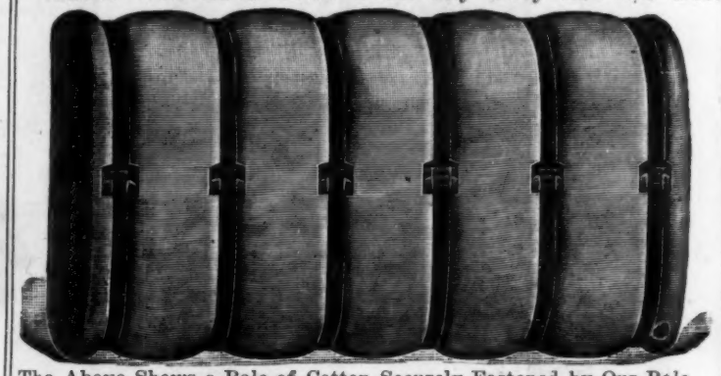
Sanitary Self-Cleaning

The U. S. Government has contracted for this Mat to be used in all its buildings throughout the U. S.

Twelve Regular Stock Sizes. Special Sizes to Order.

CARY'S BALE BAND AND BUCKLE

Those Who Have Tried Them Say They Are the Best



The Above Shows a Bale of Cotton Securely Fastened by Our Bale Ties and Buckles. Note Its Neat and Compact Appearance.

The Buckle can be applied with the Locking or Hook part next to the Bale so that there is no possibility of its getting caught in other Bales when piled together.

Also Manufacturers of
Twisted and Flat Wire Box Straps and a Full Line of Shippers' Specialties.

Cary Manufacturing Company, Manhattan Bridge Plaza BROOKLYN, N. Y.

Our new Self-Tightening Twisted Wire Strap. **Nails can be driven anywhere**

LANE
CANVAS MILL BOXES and Trucks

FIG. 27

Lane Roving Truck

Mounted on our improved Thread-guard Casters. No clogging up of bearings. Light, easy running and extremely durable.

Made of King Cotton and Steel

FIG. 20.

Lane Baskets

are made of strictly long staple cotton duck of great tensile strength. Spring-steel frame is practically indestructible. Rim bound with tough leather.

Sold direct and by leading Supply Houses.

W. T. Lane & Brother, Manufacturers, Poughkeepsie, N. Y.

Equip Your Mill With

Leatheroid
MILL RECEPTACLES

"Leatheroid" No. 1 Seamless Roving Can. Patented "Leatheroid" rolled top, rolled in and under two and one-half times, having no steel rim underneath the roll to break the can. Solid steel bottom, steel chime, 6 in. kicking band.

Deserve preference because of superior durability.
Any Textile Mill Supply House in the South can supply these receptacles in any size or quantity.

Roving Cans, Trucks, Doffing Cars, Mill Boxes, Barrels, Baskets, Etc.

Sold by the Leading Textile Supply Houses of the South.

Leatheroid Sales Co.

1024 Filbert St., Philadelphia, Pa.
Selling Agents for the Leatheroid Co.

"Leatheroid" Steel Clad No. 2 Car.
Regular Sizes:
32 x 18 x 18 — 42 x 24 x 28
36 x 24 x 24 — 48 x 30 x 30

"STANDARD"
MILL EQUIPMENT

Superior Products That Last Longer

STANDARD TAPERED FIBRE BASKETS.
"STANDARD" FIBRE CARS.
ROVING CANS—TRUCKS—BARRELS—DOFFING CARS—BASKETS—BOXES—ETC.

Write today for catalog.

STANDARD FIBRE COMPANY
Miller Street, Somerville, Mass.

KEYSTONE FIBRE CO.

YORKLYN, DEL.

Peerless Seamless Roving Cans.

Keystone Gill Cans.

FIBRE RECEPTACLES
for
COTTON, WOOL, SILK AND JUTE MILLS
Write for Catalogue D.

Hercules
TRADE-MARK REGISTERED

Combination Doffing Cars

One stationary and one loose fibre box.
Substantial wood platform.
Self-oiling wheels.
Boxes may be steel clad if desired.

Vulcanized Fibre
Roving Cans, Boxes, Trucks, Barrels, Baskets, etc.
Write for Catalog No. 19.

FIBRE SPECIALTY MFG. CO.
Kennett Square, Pa.

Tare Beam for automatic deduction of tare weight.

"Load and Look"

Kron Scales

AUTOMATIC **SPRINGLESS**

All Metal Construction

Made in U. S. A.

For Textile Mills, Factories, Warehouses, Etc.

Equipped with Tare Beam and Locking Lever.

Suspension type platform, equipped with Kron diamond checkered steel top.

Made in types to meet all requirements. Any capacity.

Write for catalogue and full information

American Kron Scale Co.

422 East 53rd St., New York

Branch Offices: Boston, Providence, Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago, Wilson, N. C., San Francisco.

Southern Office—405 Urban Bldg., Louisville, Ky.

CHAPMAN BALL BEARINGS

Saving Profits

"During the next ten years some of the largest profits in American Industry will be saved out of operation. Heretofore profits have been made, but saving a profit is altogether different."

CHAPMAN BALL BEARINGS

the bearings with the double row of balls—begin the saving at the very source of loss. They can save every ounce of that power that is wasted now in overcoming the frictional resistance of those plain bearings on your lineshafts. That waste, eating into your profits, amounts to more than you may think. Some of your profits from these days of prosperity, invested in Chapman Ball Bearings, will help you pay dividends in days of keener competition.

Investigate—Send for our book on Bearings.

TRANSMISSION BALL BEARING COMPANY, Inc.

1050 Military Road, BUFFALO, N. Y.

New York: Room 101, 30 Church St. *Branch Offices* **Philadelphia: Bourse Building**

CHAPMAN DOUBLE BALL BEARING CO., Ltd., 339-351 Sorauren Ave., TORONTO, ONT.

FREADRICH BELTING CO.

MANUFACTURERS OF

Oak Tanned LEATHER BELTING Surface Tanned and Waterproof

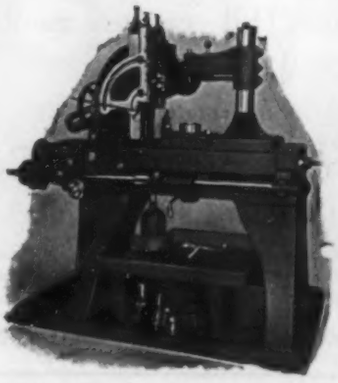
LACINGS
CEMENTS
DRESSINGS

SLABS
STRAPS

SOUTHERN REPRESENTATIVE M.E. STEVENS 316 PEACHTREE ST., ATLANTA, GA.

St. Louis, Mo.

EXPORT DEPARTMENT NEW YORK, U.S.A.



Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills. Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.

For Efficiency and Economy

Trade-Mark

Use NIGRUM Bearings

Reg. U. S. Pat. Off.

You'll never have to stop your machine, due to the neglect of someone to properly oil it, providing you use NIGRUM Bearings.

NIGRUM Bearings run smoothly and evenly without oil, grease or attention. They will save you money by saving you oil, and eliminate much of the wear and tear upon the working parts of the machine.

Also manufacturers of **BOUND-BROOK** Graphite and Bronze Oil-less Bearings.

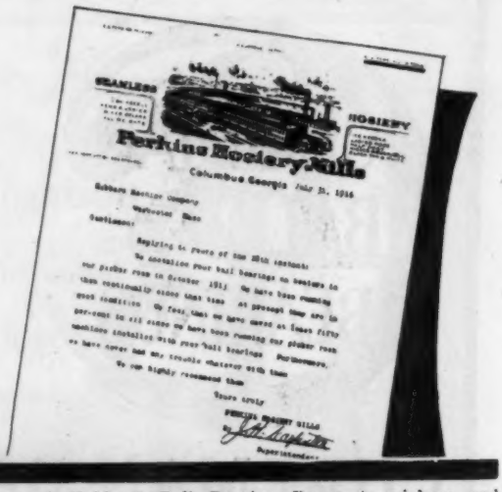
Write for Interesting Booklet, "Oil-less Bearings."

BOUND BROOK OIL-LESS BEARING CO.

10 Church St., BOUND BROOK, N. J.

All Genuine Graphited "Oil-less Bearings" have always been made at Bound Brook, N. J., in the United States of America.

Read What They Say


Perkins Hosiery Mills

Columbus Georgia

THE advantages of Hubbard Ball Bearing Boxes to pickers and cards are: economy in power; slightly increased production due to steady operation; uniform quality of production due to permanent accuracy of the bearings; cleaner stock and cleaner machine sides due to the prevention of leakage of lubricant and saving in lubrication and maintenance.

These advantages have appealed to practical mill men, and the item of extra cost of the ball bearings is readily overcome by the power saving, which from data given by a large number of mills operating these ball bearing boxes amounts to from 25 to 75 per cent of the investment.

Equip your present Pickers and Cards with Hubbard Ball Bearing Boxes and produce higher efficiency in your picking and carding rooms. Ask those who now use them.

They are made to replace old plain type journals without machine work at the mill. The change over to ball bearing boxes is completed easily and many mills are "modernizing" their machines by applying these efficient bearings.

Write today for interesting bulletin.

HUBBARD MACHINE CO. WORCESTER, MASS.

FRED H. WHITE, SOUTHERN AGENT, CHARLOTTE, N. C.

HUBBARD BALL BEARING BOXES

SAVE RESPLICING COSTS AND DELAYS

When one of the individual ropes on your English system rope drive stretches you simply place a clamp around each half of this coupling, hold one rigidly and twist the other.

The rope is shortened by twisting up the strands and an internal lock holds the rope to the shorter length.

Hunt Coupling ready for use.

By this coupling you maintain the rope at its original diameter, control all stretch during its life and the rope is shortened without removing it from the pulleys.

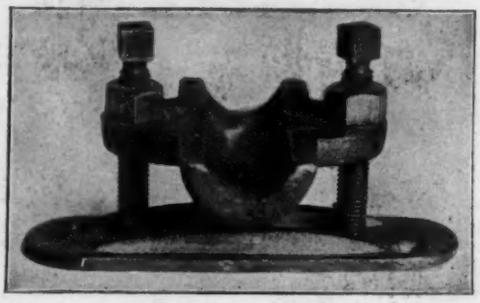
Ask for Catalog W-15-1 giving full information regarding the coupling and describing our "Stevedore" Transmission Rope which is particularly made for power transmission purposes.

C. W. HUNT CO., Inc.,

WEST NEW BRIGHTON, N. Y., U. S. A.

61 Broadway, N. Y. City. Fisher Bldg., Chicago.
Munsey Bldg., Washington.

DAY Adjustable Rocker Shaft Bearings



No. 1 A. Patented Oct. 26, 1915.

THIS is just a common sense attachment that has not failed to satisfy a single mill.

Your rocker-shaft troubles will be over when you equip your looms with Day Adjustable Bearings. They will save you the cost of a new rocker shaft for all time, reduce seconds and thin places, save in supplies, break-outs, and in many other ways.

As one Georgia mill superintendent wrote us,

"Any practical mill man who will test these bearings, will find at least twenty different ways in which they will keep the loom in better shape and increase production. I would advise any mill man to try these bearings and be convinced of the merit of it, like I have been."

This man equipped his 1820 looms with Day Adjustable Bearings.

Any of the many mills using them will tell you about their many advantages.

Let us send you a pair for trial. State kind of loom. Write today.

Textile Specialty Company

(Formerly Day Adjustable Bearing Company)

GREENWOOD, S. C.

Over 60,000 pulleys —3 to 120 inches in diameter—stocked at centres named below and additional thousands stocked by over 200 dealers, insure prompt deliveries. Write for quotations and delivery dates.

"AMERICAN" Steel Split Pulleys are chosen for the service superiority they have shown during the twenty years they have been on the market. The three million "AMERICAN" Pulleys that have been marketed demonstrate their definite advantages.

"AMERICAN" Steel Split Pulleys *wear* longer, deliver *more power* and consume less energy. They cut the air instead of fanning it. Their ample *strength* prevents *breakdowns* and *accidents*. They are almost *gear-like* in belt *gripping*.

And our country-wide dealer service assures instant deliveries.

American Pulley Co

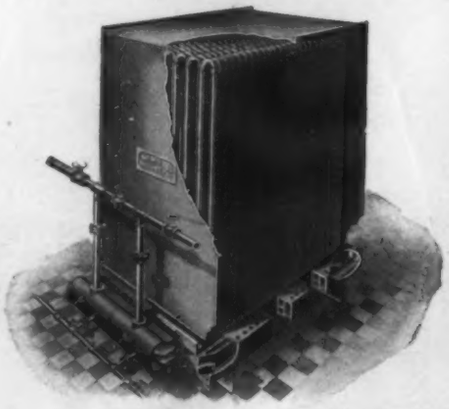
4236-60 Wissahickon Avenue

Philadelphia, U. S. A.

New York - 33-35 Greene St.
Boston - - 165 Pearl St.
Chicago - - 114-115 S. Clinton St.
Seattle - 536 First Ave., South

AMERICAN STEEL SPLIT PULLEY

Hot Blast Heating for Buildings and Factories



THIS Improved Sectional Heater consists of a number of coils enclosed in a sheet steel casting. The coils are constructed upon cast-iron bases, so divided by diaphragms that a positive circulation of steam is insured. All pipes are exactly the same length, they are screwed into the bases, and the upper end of each pair is connected by a return bend. All pipes being vertical, it is impossible for the water to remain in them.

The water seal at the rear end is a special feature, and is provided with a plug so that it may readily be cleaned should sediment accumulate.

By a simple arrangement of steam connections, either live or exhaust steam may be used in any portion of the coil.

Built in all sizes. Let our engineers solve your heating problems. Ask for catalogues Nos. 65 and 67.

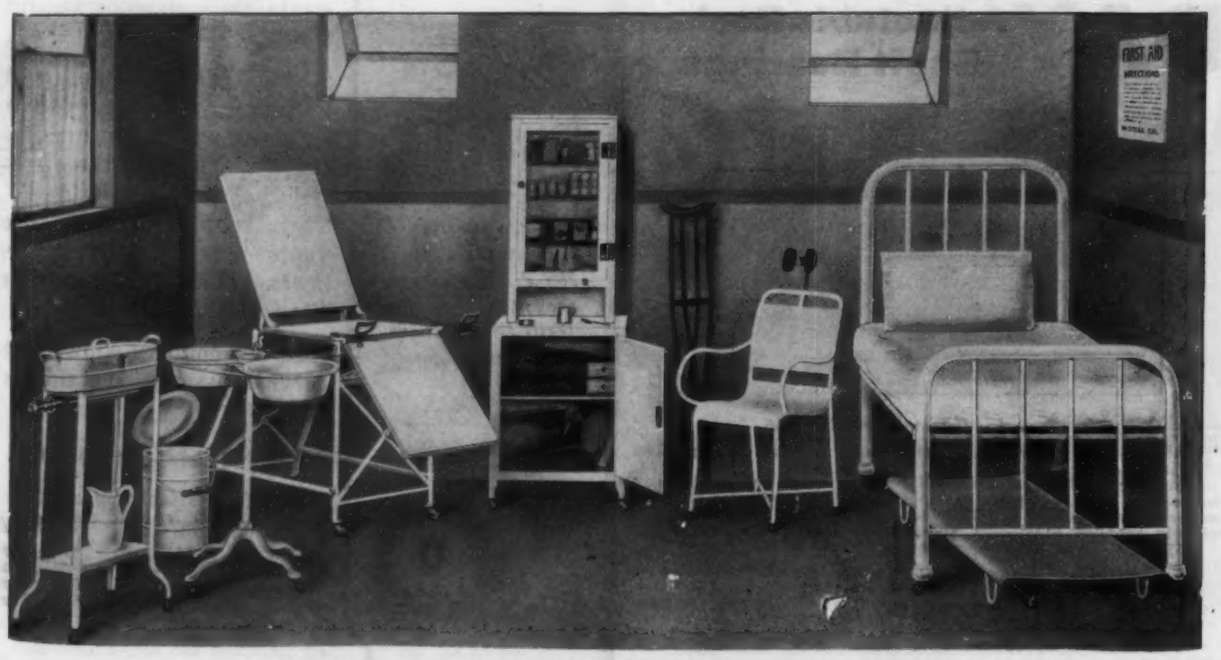
The New York Blower Co.

Main Office: Archer Ave., and Canal Street, CHICAGO, ILL.

Works: BUCYRUS, OHIO.

508 Erie Bldg. Cleveland, O. | Ridge Arcade Bldg., Kansas City, Mo. | 502 Plymouth Bldg. Minneapolis, Minn. | 303 B. P. Jones Bldg. Pittsburgh, Pa. | 12 Railroad Place East Orange, N. J.

BUILT RIGHT RUN RIGHT



A NEW INDUSTRIAL FIRST AID OUTFIT.

Designed by the surgeon in charge of one of the largest Industrial plants in the country, and comes complete with everything needed for First Aid work.

Let us quote you manufacturer's prices on our New First Aid equipment or on a special outfit that better meets your requirements. Send for booklet describing First Aid or Emergency equipments.

FRANK S. BETZ CO. - - - - HAMMOND, IND.

METAL STOOLS AND CHAIRS

ANY LENGTH----3 OR 4 LEGS
BLACK-----GREEN-----MAROON

OUR LINES:
—
Wash Bowls
—
Ice Cooled Fountains
—
Metal Lockers
—
Metal Racks
—
Plumbing
—
Fixtures Etc.

METAL EQUIPMENT

Send For Catalog

Manufacturers Equipment & Engineering Co.

136 Federal Street, Boston, Mass.

Works and Main Address Framingham, Mass.

B-W WELDING APPARATUS

Saved One Mill $12,000 Within One Month of Date of Installation.

This Mill was operated by water power.

The most essential casting broke, and rendered the water turbines useless.

A new casting could not be secured under eight weeks.

It was impossible to repair this part by ordinary means.

This mill was paying $250.00 per day for power until our men arrived and welded it in less than two days at a total cost of $26.00.

We would be glad to give you the name of this mill and many others we have helped out.

Write us today.

BIRD-WILCOX CO., Inc.

Atlanta **Charlotte**
Chattanooga **Savannah**

Oxy-Acetylene Welding and Cutting

Broken Lay-Sword Made Good as New at Cost of 20c

The ease and certainty with which repairs like the above are accomplished by the oxy-acetylene welding process, the low cost and high quality of the finished repair, are factors of great importance to every textile mill. Oxy-acetylene welding greatly simplifies and lowers the cost of intricate mill machinery repairs.

In making immediate repairs of important operating equipment, right in your own shop, avoiding expensive tieups and costly delays awaiting new parts, the savings in time alone could easily pay for the entire welding outfit, in a very short time.

Prest-O-Lite PROCESS

Employs both gases (acetylene and oxygen) in portable cylinders. Prest-O-Lite Dissolved Acetylene (ready-made carbide gas) is backed by Prest-O-Lite Service, which provides dry, purified gas, insuring better welds, quicker work, and lower cost, and also avoids the large initial outlay and heavy depreciation incurred in making crude acetylene in a carbide generator.

Necessary equipment is not expensive. We furnish high-grade welding apparatus for $60 (Canada $75); acetylene service at additional cost. Adaptable for oxy-acetylene cutting by the addition of special cutting blow-pipe. Thorough instructions are furnished free to every user of Prest-O-Lite Dissolved Acetylene—any average workman who understands metals can learn the process quickly and easily.

Any mill, large or small, will find many profitable applications for the Prest-O-Lite Process. Write for illustrated literature of great interest to those engaged in the textile industries.

The Prest-O-Lite Company, Inc.

The World's Largest Makers of Dissolved Acetylene

U. S. Main Office and Factory:
836 Speedway, Indianapolis, Ind.

Canadian Office and Factory, Merritton, Ontario.

53 Branches and Charging Plants.

Cool Condensing Water Produces High Vacuum.

What is the temperature of your condensing water?

What vacuums are you obtaining? How much are you losing in hot weather by high temperature water and low vacuum?

We will not only answer this but tell you **how much more you save** if the water is properly recooled. The

Our Patented Nozzle.

SPRACO COOLING SYSTEM

Has Solved the Condensing Water Problem.

We assume full responsibility of design and operation. Each installation designed especially for the particular conditions.

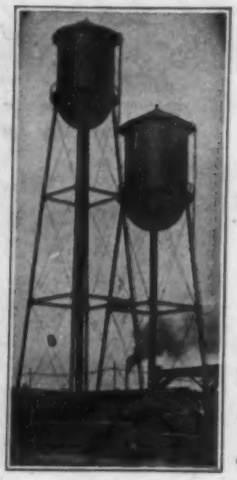
The service of our engineering staff is at your disposal at all times. Our booklet shows many installations both on the ground and on roofs, when ground space is limited. Write for it today.

SPRACO PRODUCTS

Spray Engineering Co., 93 Federal St., Boston, Mass.

Atlanta, Ga., Earl F. Scott, 707 Candler Bldg.; Birmingham, Ala., McClary-Jemison Mchry. Co.; Charlotte, N.C., J. S. Cothran, 200 Commercial Bank Bldg.; New Orleans, La., A. M. Lockett & Co., Ltd., 533 Baronne St.; Houston, Tex., Tenant-Lovegrove Co., Union Nat. Bank Bldg.; Dallas Tex., Smith & Whitney, Southwestern Life Bldg.

TOWERS and TANKS That are Built Right



Boilers,

Structural Steel Work

Sheet Steel and Plate Work

Boiler Tubes, Castings, Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.

Chattanooga, Tenn.

Service Proportionate to its Better Design

FOSTER Back Pressure Valve

is self-contained; with no direct acting springs, no weighted levers and no outside dash-pot.

It has no loose parts. Its large dash-pot has cushioning capacity sufficient to take up the pulsations of the engine without chattering.

The compensating spring movement insures reliable and precise functioning and the high grade material and workmanship common to all Foster Steam Specialties is your insurance of long service and slight outlay for repairs.

When you write us we tell you how to "make sure" of its service. A good way to begin your investigation is to send today for 1917 Foster Catalog.

FOSTER ENGINEERING CO.

NEWARK, N. J.

We also make high pressure regulators, low pressure regulators, non-return stop valves, free exhaust valves, pump governor, float valves, fan engine regulators, etc.

180 No. Dearborn St.,	Chicago, Ill.
161 Summer St.,	Boston, Mass.
404 Arrott Bldg.,	Pittsburgh, Pa.
712 Harrison Bldg.,	Philadelphia, Pa.

"Reliability Their Main Feature"

Tear Down the old Board Fence

Let in the light and air
Keep out tramps and thieves
Make your grounds SAFE

DON'T wait until you are confronted with the problem of protecting your property before taking steps to safeguard your plant and your workmen. Don't wait until your property has been burglarized or set on fire by trespassing tramps, before putting up an unclimbable, indestructible

ANCHOR POST FENCE

This fence is a constant protection, guards your plant by night as well as by day. It adds greatly to the appearance of a factory. Unlike a board fence it provides no convenient place for dumping rubbish, and where it is located so close to the buildings it does not shut out the light.

Write for our catalog on Model Factory Fences

Anchor Post Iron Works
11 Cortlandt St. So., New York, N.Y.

MISSISSIPPI WIRE GLASS

Postex Cotton Mill, Post, Texas

is installed for Fire and Breakage Protection, Light Diffusion and Minimizing Cost of Maintenance.

Let us mail you samples and literature which will give valuable information.

MISSISSIPPI WIRE GLASS CO.
217 5th Ave.
NEW YORK.

7 W. Madison St., Chicago, Ill.

4070 N. Main St., St. Louis, Mo.

Each Square Foot

of your factory grounds will become absolutely private; just as safe as the space inside your factory walls. You can use it in ways impossible while it now lies unprotected. Storage of materials unaffected by the weather—fuel, parts and stock in cheap open sheds. Some even provide recreation grounds, their use being easily restricted to employees only. These are suggestions which we make, prompted by the experience of those who have erected

STEWART
Factory Fence

After these manufacturers had decided the fence problem, their own investigations prompted them to specify Stewart Fence. Its strength and durability at moderate cost were factors they could not overlook. They recognized the results of improved design, the advance which Stewart workmanship evidenced in the art of making fences. These same factors will likewise be apparent to you; will show you what only years of experience can produce.

This is one angle to wise fence selection. There are others equally important. Let us furnish information explaining them. Stewart Fence owners will also help you buy safely. Give them the opportunity NOW.

Write today for booklet.

The Stewart Iron Works Co.
"The World's Greatest Iron Fence Works"
625 Stewart Block, Cincinnati, Ohio

SWARTWOUT ROTARY
BALL-BEARING **VENTILATORS**

Copper Glass-Top "Skylight" Type with base.

Standard Ventilator is galvanized Sheet Metal with Metal Top

NO employer can fairly expect clear-headed and clear-eyed workmen in badly aired, dark work rooms. Install Swartwouts for their protection. The clear heads and clear eyes come; with them *come larger profits.*

To secure *profitable* ventilation use the Swartwout Rotary Ball-Bearing Ventilator, the ventilator that "puts the wind to work." Free wind power creates a vacuum which is filled by a steady flow of used air from within. The Swartwout is a *ventilating machine* without operating expense.

The Swartwout Catalog is literally a "Guide to Fresh Air," giving you 24 pages of exact facts, figures, drawings and specifications.

THE OHIO BLOWER CO.
5151 Perkins Ave., Cleveland, Ohio.
Branch Offices and Agencies in all principal textile centers.

30 of the South's Largest Mills use

WOLF'S MILL WHITE

It is one of the few mill white paints that meets the demand for efficiency and economy in this kind of material. It is no experiment. It's a paint that has "made good" in some of the largest mills of the South, including the Republic Mills, Henrietta Mills, Hawthorne Spinning Co., and many others. Its use is spreading day after day.

Used in your mill, it will brighten up the interior—cut down your light bills—and save you money in your paint appropriation because it outwears any other and will not crack, peel or flake off.

A trial order will demonstrate the superior qualities of Wolf's Mill White. Send in an order today.

Price per gallon, $1.60.

Leon L. Wolf Paint Company,
304 Lincoln Inn Court, Cincinnati, Ohio.

We refer to J. E. Sirrene, Greenville, S. C., one of the South's foremost mill architects and engineers, as to the merits of Wolf's Mill White.

75% of all electric power used in the Textile Mills of this Country passes through G-E Motors

Inevitably—you will electrify

SOONER OR LATER the advantages of G-E MOTOR DRIVE are going to become so apparent, that you will ask our Engineering Organization to study the conditions and requirements of your plant—just as the owners of the equipment here illustrated asked us to do.

For of course you want to know how you can cut the costs of production—how you can save on your POWER costs—how you can increase the QUALITY of your output, and how you can increase its QUANTITY.

In *every* field of activity where power is used, transmitted or generated, the trademark of G-E Initiative and Quality is found. In power stations of far-off mountains you will find G-E apparatus built to meet the special need. You will find the "G-E" trade-mark on the electrical equipment of the Panama Canal and on the locomotives which tow the ships through. The electrification of the railways which carry the commerce of the nation east and west across the Rockies is a tribute to G-E engineering skill. Manufacturing plants, large and small, in all sections of the country, enjoy marked advantages in production over their competitors because the General Electric Company has solved their power problems. All that has been learned in each individual field of electrical endeavor is transmitted through the great Research Laboratories of the company to its engineers in all departments, so that in the solving of *your* problems *you* may have the benefit of all the knowledge and experience that has gone before.

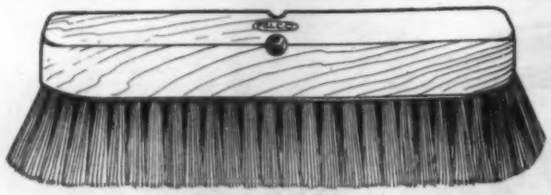
And because the General Electric Company possesses specific, definite knowledge of all the intricacies, puzzles and problems of industrial power, and applies to their solution the knowledge which no other organization can boast, G-E service is the greatest guarantee of results that you can possibly have. The organization and resources of the General Electric Company stand squarely behind every G-E MOTOR DRIVE to insure satisfactory operation.

G-E Motor Drive

GENERAL ELECTRIC COMPANY

General Office, Schenectady N.Y. Mill Power Dept. Boston, Mass.

6841



Straight Floor Sweep

FELCO **FLOOR SWEEPS**

are made to last. Your broom expense will be practically eliminated, for Felco Sweeps outwear a dozen brooms.

Made in any width for any purpose.

Write for prices or may we send you a trial broom?

D. D. Felton Brush Co., Atlanta, Ga.

S. A. Felton & Son Co., Manchester, N. H.

Manufacturers and Repairers of all Kinds of Brushes.

Curved Floor Sweep for Spinning Room Alleys

SIMPLICITY

An excellent and unique hand threader in a reliable shuttle.

Straight or curved saw cut.

Write for sample set of threader eyes.

SHAMBOW SHUTTLE CO.,
Woonsocket, R. I.

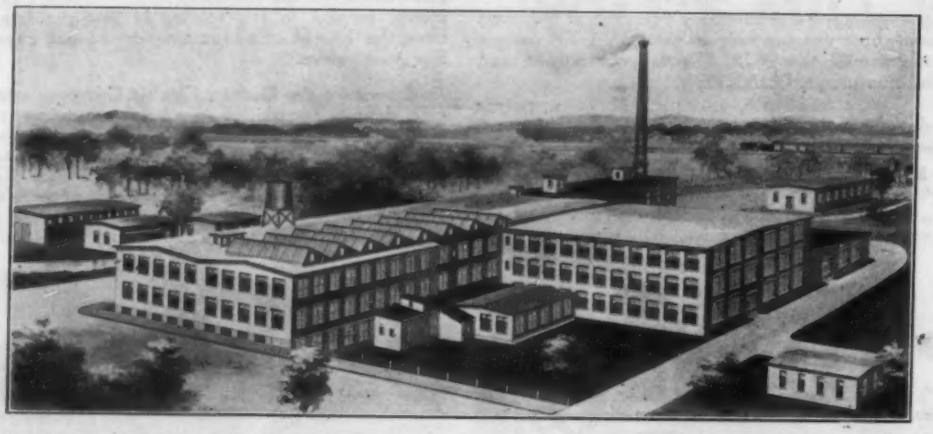
P. B. McMANUS, Pres. and Treas. E. J. McCAUGHEY, Secy. and Mgr.

Home Bleach & Dye Works, Inc.

Established 1881.

Dyers, Bleachers and Mercerizers of Cotton Yarns—in Skein and Warp

Daily Capacity 50,000 Lbs.



PUT YOUR PROCESSING IN OUR HANDS if you want to be sure of results. We have had 35 years of experience in Dyeing, Bleaching or Mercerizing and have every modern equipment operated by skilled employees.
Pure Bleaching for Piece Dye Work. Fancy Colors Dyed to Match Samples. Special Finish. Special Dyeing of Cotton Yarns for Silk Goods in Black and Colors.
Also—Facilities for Winding Cotton Yarns on Paper Cop Tubes for the Shuttle, also on Beams and Cones and Parallel Tubes.

Office and Works at Pawtucket R. I.

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 for two years; Canada, $1.00 a year; Foreign, $1.50 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

Copyright, 1917. W. R. C. Smith Publishing Co.

Volume 81. **Member Audit Bureau of Circulation.** **Number 5**

This Issue, 5,200 Copies.

WHO PAYS FOR THE ADVERTISING?

Naturally some one must be paying for the vast amount of advertising which is appearing regularly in the various technical journals, general magazines and newspapers.

At first thought one might say the advertiser as he certainly signs the checks. But the advertising helps his sales organization to make more sales at less cost. His ultimate profit is greater; he surely is not actually paying the cost.

Occasionally the buyer or consumer believes the advertising is charged up to him, thinking that the price made to him is made enough higher to cover the cost of the advertising. But again as the advertising enables the manufacturer to sell his products with less expense, he is enabled to make a better price to the consumer and the consumer is also profiting.

How about the competitor who is not advertising? He is constantly losing sales by not having his products constantly before the buyers in the field, by not steadily building up confidence and good will in his products. He is ultimately paying the cost of the advertising.

WHERE TO BUY.

The superintendent of a South Carolina mill writes us:

"I am desirous of getting some information on spinning top rolls, that are being covered with cork.

"I understand that there are one or two mills in Atlanta, who are trying out the experiment.

"Thanking you for any data you can secure for me on this subject, I am —"

From the superintendent of another South Carolina mill:

"Not being able to find it in the advertisements of COTTON, I am writing to ask if you know of any concern making yard counters for looms. If you know of any one making these counters, will you be so kind as to give me their names."

CONTENTS

EDITORIAL—

Taxing Corporations 255
Far Eastern Markets for American Textiles 256
Technical Textile Conference 256

GENERAL—

Georgia Manufacturers Meet at Savannah 257
President's Address 258
Some Legislative Figures 261
Foreign Trade 262
Industrial Citizenship 263
Southern Mill Situation 269
New England Mill Situation 270
Lancashire Notes 272
The Yarn Market 273
Cotton Comment 274
System of Numbering Colored Yarn 274
Grinding the Revolving Flat Card 275
Latin American Monetary Systems 277
The Prize Contest 277
George Mallet MacNider 278
The Determination of Weight and Breaking Strength of Warp Yarn Due to Sizing 278
Ball Bearing Hints 282
Notes About Men You Know 284
The Self Starter 287

HOW OTHER MEN MANAGE—

Analysis of a Cotton Fabric 289
Cooperating With Overseers 290
Twist and Breaking Strength 292
Book Reviews 294
Graddick's Production Table No. 6 296

KNITTING SECTION—

Cost Accounting in the Knitting Mill 299
The Knit Goods Market 305
Calculations for Knitted Fabrics 307
Among the Knitting Mills 310

From a Northern Manufacturer:—

"We notice in looking through your January issue of COTTON under 'Where to Buy,' a list of some of the inquiries received by you during the past month, and in looking this over, it has occurred to us that you might be in a position to give us the names of some manufacturers of cheesecloth. We use large quantities of 22 x 18 cheesecloth, but have never had a Southern connection, and, if you know of any concerns in the South making cloth as light as this we would very much appreciate knowing who they are."

From a knit goods broker:—

"I am in the market for a thousand cases of children's ribbed hose sizes five to ten, prices 85 cents to 87½ cents. If you know of a mill in your section in a position to consider this proposition please advise me."

EXTRACTS FROM OUR DAILY CORRESPONDENCE.

From a textile engineer in China:

"Am sending you herewith check to renew my subscription to your valuable paper.

"The writer is employed as a textile engineer in an American concern which has been the only concern in China up to the present handling American textile machinery.

"I take this opportunity to say a word of appreciation for your well published paper from which I often derive material that cannot be found in any other textile journals."

From the traffic manager of fifty cotton mills:

"Coming over on the train yesterday I took opportunity to read your article in COTTON under the head of 'The Need of a Traffic Bureau,' and I want to say that this is a splendid article and well arranged. I wish that every president or manager of the cotton mills and hosiery mills in Georgia, Alabama, and elsewhere could read this article and give the subject some thought."

BOILER SCALE Never Was NEUTRAL

It is always on the offensive, coating the shells and tubes of the boiler and greatly lowering the boiler's steaming efficiency.

Dixon's "Pioneer" Boiler Graphite

is flake graphite. Flake Graphite is the "sapper" that undermines and penetrates the scale at the time of its formation.

Dixon's Pioneer Boiler Graphite attacks scale on all sides, rendering it easy to remove when a cleaning tool is used in the ordinary way.

One engineer effected a saving in cleaning cost of 28¾c on each boiler tube by using "Dixon's Pioneer" method. Why don't you?

Send for booklet 34-T.

Made in Jersey City by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

"AIRPLANE" VIEWS OF TEXTILE MILLS

Drawings of textile mills that look like photographs but are more artistic. We specialize in this kind of work from architects' plans or blueprints *BEFORE* the plant is erected.

RUDOLPH J. SHUTTING CO.,

CHATTANOOGA, TENN.

Long Distance Phone, Main 3754.

SUCCESSFUL SOUTHERN BOBBIN MAKERS

JORDAN MFG. CO., Monticello, Ga.

Allen Safety Set Screws

Any length, point or thread. We make a specialty of short lengths.

Allen Socket Cap Screws

are very neat in appearance and exceedingly strong.

Send for Circular No. 21 and free sample for testing.

THE ALLEN MFG. CO., Hartford, Conn.

People's Life Bldg., Chicago, Ill.
173 Princess St., Manchester, England.

You Will Like the

UNIFORM QUALITY AND SIZE

Of "GARLAND' RAWHIDE PICKERS

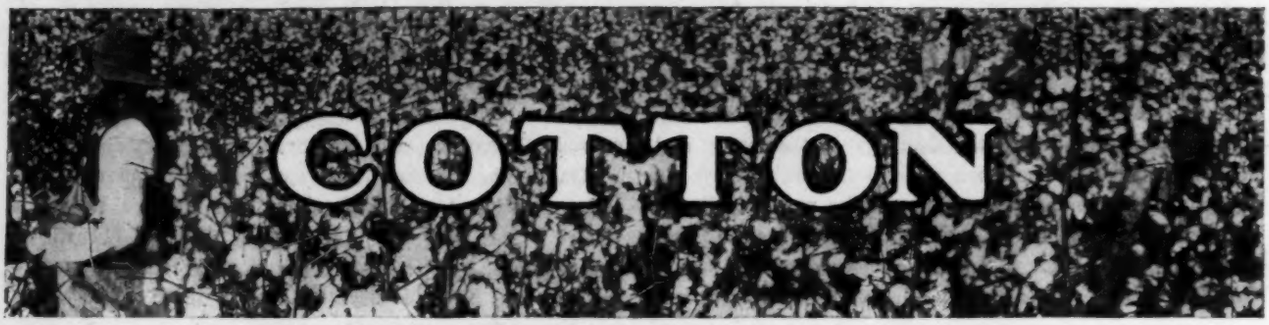
Our rawhide loom pickers are uniform in quality because they are made from the best obtainable hides which are selected especially for us, and they are uniform in size because every important process through which the pickers go is in the hands of men thoroughly experienced in the work upon which they are engaged.

GARLAND MFG. CO.

SACO, MAINE

TRADE MARK

MAR 17 1917



March, Nineteen-Seventeen.

Taxing Corporations.

The servants of the people at present occupying legislative positions, state or national, seem to take an especial pride in striking at the men who are accomplishing the most for the people through the medium of corporations great and small. That these corporations have done much to improve the standard of living of the American public cannot be denied. Moreover, this has been and is still being done in spite of the adverse legislation constantly introduced and often placed upon the statute books as law.

Much of this adverse legislation takes the form of indirect taxation. For example a bill limiting the hours of labor of women in factories, stores, telephone and telegraph offices and, in fact, in almost all employment except domestic service. This proposed legislation restricts hours of service to 8 hours per day, and it seems useless to suggest that such a program would seriously disrupt industry, and put some manufacturers employing women at a competitive disadvantage as against manufacturers in other states enjoying a longer working day. In most factories where women are employed there are men also. With the women quitting work in 8 hours, it will break up teams, unbalance successive operations and interrupt efficiency programs in many ways, besides creating a spirit of discontent among the men who remain for a longer working day.

Then there is the anti-injunction legislation. A uniform bill covering this class of legislation has been introduced into every general assembly meeting this year. This uniform bill makes lawful any sort of combination of working men and women to force increases of wages, lessen hours of labor or better the condition of its members; it strips employers of labor of the protection of the courts largely in the preservation of their personal and property rights; it prohibits judges from issuing injunctions in any cases growing out of disputes with employees "unless necessary to prevent irreparable injury to property or property rights, for which injury there is no adequate remedy at law," and even then "the property and property rights must be described with particularity and sworn to." In other words, no injunction may be issued restraining all lawless persons generally from trespassing upon or interfering with the property of the employer.

Also there is compulsory workmen's compensation. It may be conceded no one will oppose any proposition for a conservative compensation act. But will it be conservative? The confiscatory and autocratic nature of many of the provisions in this class of legislation now pending in some states, indicate that it will not.

In addition to all these comes the minimum wage bills. Tennessee is now struggling with this proposition. Such law, in effect, will say if the woman who makes $4.00 is not worth the money, "we will make her worth it." "We will remove any incentive to effort and make worthlessness a virtue by legislation." No matter how little the employee works, or of how little value the work is, the employer must pay a certain amount whether he can afford it or not. This law will say to the knit goods manufacturer, "this woman has worked a year in another knitting mill *doing something* and is, therefore, experienced and must be paid a minimum of $1.75 a day." With as much justice the law might say to the watch manufacturer that a blacksmith who had worked a year shoeing horses was a competent workman for tempering watch springs.

The foregoing are some of the indirect methods of taxation. There are also the direct methods, which must by no means be forgotten. These were well stated by Chairman M. E. Dyess of the Committee on Taxation of the Georgia Manufacturers Association in his report to that association at the Savannah meeting. In part he said:

"It was in 1816 that Lord Castlereagh in the English Parliament made his unique complaint against the English people, on account of what he termed their 'ignorant impatience of taxation.' Some forty or fifty years later, Gladstone, recalling that quaint expression made the statement that should Lord Castlereagh rise from the dead in 1860, he would be much more likely to complain of an ignorant patience of taxation.' Your Committee cannot help wondering what would be the phrase to be employed by these dead and gone English statesmen should they in the year 1917 attempt to characterize a system of direct triplicate taxation on a class of citizens which embraces eight different sets of taxes, returns of which have to be prepared, and payments of which have to be made to three different governments.

"Probably all, certainly a great majority, of the members of this association are corporations. A very large proportion of them are located within the territorial limits of some municipal corporation and where so located they are subject to the tax requirements not only of the State and County and the Federal Governments but also to the requirements of that particular municipality.

"When the management of a corporation has paid its ad valorem tax to the state and county, which averages about one per cent, and has paid its license tax to the state based on its capital stock, and has registered in the office of the Secretary of State and paid for that, and has registered in the office of the Ordinary of the county and paid for that, and has then gone over to the City tax office and paid an ad valorem tax on its property to the City, and then paid a license tax to the City for the privilege of doing business, and has then figured out its income for the preceding year for the National Government and paid two per cent on that income, and has then figured up the value of its capital invested and deducted $99,000 from that and paid its tax to the United States based on the balance, and then hears rumors of an excess profit tax, then your Committee respectfully submits that the management of that corporation may be pardoned if it has reached the state of mind of that young English soldier who wrote home from the trenches to his sister:

"'Dear Mary:

"'They put me in the barracks; they took away my clothes and put me in khaki; they took away my name and gave me No. 216; they took me to church, a thing to which I was not accustomed, and I listened to a preacher for fifty minutes and when he finished he said we would sing but before the song he called out No. 216, "Are you weary, are you languid?" and then they put me in the guardhouse for seven days because I got up and said I certainly was.'"

If corporations expect to live under such a cross fire of radical legislation, they must literally adopt the advice of Col. J. Rice Smith of Augusta and "Get together! Stick together! Work together!"

Far Eastern Markets for American Textiles.

Reports from Commercial Agent Ralph M. Odell of the U. S. Bureau of Foreign and Domestic Commerce, are always of interest. Readers of COTTON are familiar with the activities of Mr. Odell and will recall his important aid in promoting the sale of over $600,000 worth of American cotton machinery to China. Among his most interesting monographs is that dealing with the Dutch East Indies, in which it is stated that the value of the cotton goods trade of these islands amounts to approximately $40,000,000 annually, and in imports of cotton cloth Java alone ranks third among the world's markets, with American goods playing a very unimportant part at the present time.

The value of his efforts to American manufacturers of cotton goods and makers of textile machinery is too well known to demand extended comment. He has succeeded in placing many cotton goods importers in touch with United States firms, from which substantial business has resulted. As an instance of big results in China, it may be mentioned that Mr. Odell learned that certain interests contemplated the establishment of cotton mills there. The attention of American manufacturers of machinery was invited to the opportunity and the result was the placing of orders in this country to the value of nearly $700,000.

Mr. Odell reached India in December, 1915. He has already traveled through and made reports on Bengal, Burma and Madras (his monograph on the last was issued last fall). He reached Bombay about the middle of November, 1916, and has remained in that Presidency to date. He will soon travel north as far as Karchi and study the scattered markets of northern India, which include Benares, Cawnport, Lucknow, Delhi, Lahore, Amritzar, Rawalpindi, and possibly Peshawar (near the border of Afghanistan).

One might say that India has a thousand markets for cotton goods and each is peculiar. For instance, while the United States exports to India about $1,000,000 worth of cotton goods, practically all of it is gray drills shipped to Bombay and Karachi; while in Madras there is practically no demand for gray goods.

The samples collected by Mr. Odell have been forwarded to New York and turned over to the Sample Division at room 109 Customhouse, New York. The labor involved in choosing and purchasing these specimens in demand is of no small importance. Great care is used in shipping the samples to avoid the possibility of damage by climate, mildew, moths, etc., and they are truly representative of the demands of the market.

Dr. Pratt, chief of the Bureau of Foreign and Domestic Commerce, announces that Mr. Odell will probably finish his work in India by March, 1917. On his return to the United States he will visit the principal manufacturing centers to confer with and address business men regarding foreign markets for American cotton goods.

Technical Textile Conference.

The second annual conference of those interested in the consideration of problems relating to the testing and general technology of textiles and the closely allied materials, cordage, thread and felt, will be held at the National Bureau of Standards, Washington, D. C., commencing April 26, 1917, at 9 A. M. and continuing for one, two, or three days as required. All persons interested are cordially invited to attend. Those desiring to present papers describing results and methods of researches in these fields will be permitted to do so in so far as there is time available.

It has been suggested that at the meeting the conferees might consider the advisability of forming a permanent society for the promotion of research. The functions of such a society might include some of the following, as well as others:

(1) To maintain a library for assembling and disseminating printed information of all kinds about the textile and allied industries.

(2) To publish a periodical, devoted exclusively to technical considerations, in which original papers would be printed in full and abstracts given of current articles and books.

(3) To hold regular meetings for the discussion of technical work in progress or completed.

(4) To offer prizes for the satisfactory solution of specific problems.

(5) To give university scholarships to competent men desiring to equip themselves for textile research.

(6) To maintain laboratories for the general investigation of the physical and chemical theory of textiles.

Any comments or suggestions regarding any of these matters will be greatly appreciated.

Georgia Manufacturers Meet at Savannah.

The second annual meeting of the Georgia Manufacturers' Association was held at Savannah, Ga., on the 14th and 15th of February. While the attendance was not large, the interest and enthusiasm of the one hundred or more who were present indicated the trend of the manufacturing world toward cooperation.

A number of special Pullman cars were brought into service to handle the party, Warren H. Fogg, district passenger agent for the Central of Georgia Railway, with offices in Atlanta, giving the matter his personal attention.

Arriving at Savannah the Hotel Savannah was selected as headquarters and all meetings were held in the tea-room of that hostelry.

AT THE SAVANNAH YACHT CLUB. NINE BUSHELS OF OYSTERS! DO THEY LOOK IT?

About 10.30 o'clock President Glenn called the members to order for the

First Session

and introduced the Rev. Rockwell S. Brank, pastor of the Independent Presbyterian church of Savannah, who pronounced the invocation. President Glenn then introduced the Hon. W. J. Pierpont, mayor of Savannah, who welcomed the delegates in behalf of the city and said in part:

"The mayor of Savannah considers it an especial honor to welcome this convention of Georgians—the men who are making this a manufacturing state of the first rank. You are doing a great work for Georgia, you are applying to the natural resources of the state the elements of labor and brains, which are necessary to make these resources available, and in no other way can real wealth be produced. You have created capital without which no community or state can prosper; you are making it possible for the laboring man to share in the God-given resources of our state; you are making it possible for him to live in comfort, to own his home, to raise his family in the midst of educational and religious influences—the things which make for the highest type of American citizenship.

"Within the memory of many of the men here present Georgia was almost exclusively an agricultural state, but through your efforts it has now become well balanced as regards its industries and in consequence it is growing in wealth and power by leaps and bounds.

"The men who devote their energies to manufacturing are inspired by an ambition that is not entirely selfish, but whatever the incentive their success leads to the building up of city and state. Success presupposes perseverence, initiative, self-confidence and good judgment. It involves the investment of capital and it is contingent upon just laws and fair dealing, and not always do we obtain a square deal. An investment once made in a manufacturing plant cannot be readily moved or realized upon. Laws are too frequently enacted that hamper, and oppress the man-

ufacturing interests. Cities, states and federal government burden them with taxes of every conceivable kind, sometimes to the point where existence becomes precarious. Some go down under these conditions sinking capital and the efforts of years. And those who fail are not the only losers; laboring men, mechanics and professional men suffer and producers of food lose a market, houses are vacated and cities stagnated.

"The manufacturer is, by the very nature of his business, a developer—he is also an economist. Thousands of useful inventions in mechanics are the direct result of his efforts to substitute power for human effort—to make man's labor more efficient, to save time, to relieve life of its drudging and to increase the sum of human happiness.

"The manufacturer applies science to the solution of his problems. He calls the chemist to his aid and from waste and refuse he reclaims useful products that are of fabulous value.

"The manufacturers of Georgia have done all of these things and more for the people of Georgia. They have given an impetus to agriculture and have greatly enhanced the value of farm lands and farm products. They have been instrumental in developing the splendid system of railroads, and they have been the most potent factors in the building of the magnificent cities of Georgia, and to their energy and business foresight more than to any other cause is due the financial independence of Georgia as a state."

The address of the mayor was responded to by Col. J. Rice Smith, of Augusta. While Col. Smith spoke in a happy vein in his direct response, he also added a serious note in his talk to the manufacturers present. In part he said:

"There are three C's that absolutely sound the keynote of success in every movement made today; coalescence (get-together); cohesion (stick together); cooperation (work together) to bring about the great results and develop the plans that you have in hand. With coalescence, cohesion and cooperation, Georgia today would be doing with what she has got ten times what she is doing, and she can, if she will. Let's go forward to build Georgia anew. Let's use this organization, that new plans may be evolved to solve old problems; let new economies be practiced and extravagance be excluded—I don't mean the economy that makes the miser, but the economy that makes men and women measure up to the responsibilities of the day; an economy, that does away with worry; an economy, that makes good all along the line and makes for men on every step of the way.

"We need a personal supervision or observance of the unwise, unjust and unnecessary legislation that often means that individual ideas are enacted into statutes which hamper the progress of industries, as well as the progress of the commonwealth. I believe in the enforcement of all law. If it is a bad law, it should be repealed; and, if it is a good law, it should be sustained, but all laws that stand on our statute books, as long as they are there written, should be fully and completely enforced.

"There is much that I could say, but I am not going to tire you by taking it up in detail, as to what a great organization like this can do. However, in conclusion, let me say that if these 4700 listed industries in the state of Georgia (which are now less than 2 per cent of all in our union, with only 1 per cent of output in its manufactured products) would all get together, all stick together, and all work together, we can make it 10,000 diversified industries and $500,000,000 of annual output instead of where it stands today."

President's Address

The next item on the program was the address by President Thomas K. Glenn, of Atlanta. President Glenn said in part:

"This marks the end of the second year of your association. Our first annual meeting was held in Atlanta last year. During this time your membership has increased 50 per cent, and the usefulness of the association many times more than that. Let me say today, that the progress of this association has been very very gratifying to me. It has grown slowly. It was necessary for it to grow slowly. There is nothing of real value that does not progress slowly. Next year I hope it will be another 50 per cent increase, and so on, until we have gotten all of these 4700 industries in the state of Georgia within our membership.

"The year just closed was, perhaps, the most remarkable period in industrial activity that the world has ever seen. Conditions have been abnormal in the extreme. What the end will be, no one can tell, and it is useless to speculate. We ask one another, and have asked today, what the end of all this is to be. I was in New York not a great while ago, in the office of a man who was president of a corporation capitalized at hundreds of millions of dollars, and I asked him that question; I asked him what the end would be? He pointed to an organ grinder out on the street and said 'That man can tell you just as much about it as I can.' Some of us have been selling in markets heretofore unheard of, and at prices in excess of those usually obtained—but will this condition of affairs last? It certainly cannot, and will not. The time will come when we will want to expand our business and take advantage of the opportunities which have shown themselves to us.

"The German industrial world attained its supremacy by cooperation, the like of which has never been seen, and we will do well to stop for a moment to consider what this has meant to them. Their trades associations have studied the needs of both foreign and domestic markets and then have gone about the task of finding means to supply them. In all of this they had the active support and hearty cooperation of their government. In some instances the government has been a real 'partner' in the enterprise. Then, too, they have employed experts to visit other countris and find out the best methods of manufacturing certain articles of trade, bringing them back for presentation to their own members. They have established banking houses in foreign and domestic localities to properly finance their operations. I do not think it will be going out of the way to say that Germany has taken its place among the foremost nations of the world in the exploitation of its enterprises, and all of this has been done largely through the means of its trades associations.

"Bringing the matter home: In our own state it would seem that we have heretofore striven to keep as far as possible from this means of cooperation, and have thus lost the advantages which might have come out of it, had we seen fit to adopt a different policy. Each of us runs our

own business and lets the other fellow do the same thing. But, in going about the work that we have in mind here, we have got to have a broader view of these things than those lines and boundaries which mark our own profession.

"A man said the other day, when we asked him to become a member of this association, that 'he didn't need it.' Well, I told him that might be true, but that we needed him, and that if he was an unselfish man he would come in on that ground if on no other. In fact, it seems to have only recently occurred to us that we might be of benefit to one another; and it is only within the past few years that this

THOMAS K. GLENN, RE-ELECTED PRESIDENT.

great state of ours has awakened to the fact that there might be some good to be derived from an association of ideas.

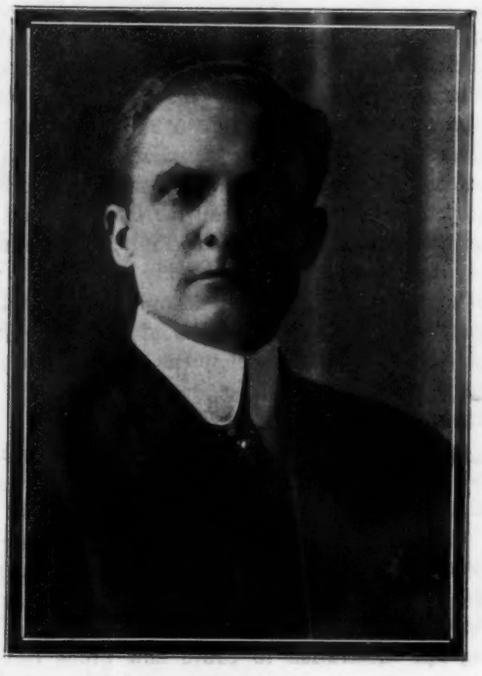
"I want to tell you right here and now, that we have within our grasp the greatest opportunity to further our interests, that I know of anywhere. We are closer to the shores of the Gulf and the Atlantic Ocean than many of our countrymen; we are making the things that are wanted in other countries, but we are sleeping on our rights and not protecting them as we should. The railroads of the country have shown a disposition to help us in the marketing of our products and in the working out of many of the transportation difficulties, with which we have had to contend. We have their cooperation now. The great banking institutions are looking for means of furthering our legitimate enterprises, and all this is going to show that with the Government and state assistance, transportation facilities and banking resources at our command, it is within our reach now to push our trade to an extent heretofore probably impossible.

"The railroads have for many years maintained a cooperative interest in the way of their traffic associations in which all railroads are members and active participants. The insurance companies have such close tariff or rate associations that anything but one rate in a community is an unheard of proposition. They work together in a way that prevents confusion, and is at all times active in the preservation of their interests. If these interests have found it so advantageous to spend large sums of money in close cooperation, shall we not take advantage of this opportunity to bring together the manufacturing interests of our state and help them to work out the many problems that confront them? This is the aim and the object of your association, and we hope that its usefulness in this direction will soon be taken advantage of by a greater number than has heretofore been the case."

Report of the Secretary.

The next item on the program was the report of Secretary W. W. Horne, of the association, which was very full and complete. Extracts from this report follow:

"It is significant of the signs of the times; that business men, representing interests where large investments are at stake, have grown to appreciate the necessity for cordial relationships between themselves, for reciprocity in ideas, and unanimity of action for the protection and advancement of those interests. This assembly is typically expressive of that significant fact, and affords an object lesson of conviction that the time has long since arrived when business men must assert their common rights and



SECRETARY WILLIAM W. HORNE.

defend them to the point of demanding consideration for those views which they entertain upon great economic questions, the determination of which may involve the life or stability of enterprise, and upon the wise solution of which rests fundamentally the hope of our free institutions.

"The old time, and for long accepted, theory that competition is the life of trade would seem to have been successfully supplanted by the more modern day optimism that cooperation is the life of trade. When we consider that competition for power and national influence is responsible for many of the evils under which industry suffered today, we may very properly and wisely conclude that competition is by no means, at all times, an economic question. It has not only been the source of many industrial wars but to it is directly traceable the cause of most military wars. It is

suggested to the mind with convincing force, therefore, that competition is not beneficial to trade in any broad sense. Indeed, every bankers' association, every board of trade, every mercantile or manufacturers' association, every labor organization, is a flat denial of the competitive idea. It is a delusive phantom that has given way to the more modern and fundamental conception of industrial life, contemplated in the term cooperation. Cooperation is the natural law, the source of our highest civilization, and the hope for greater opportunity and prosperity.

"At the risk of invading a field of speculative philosophy, I venture to give as reason for failure on the part of many who have not supported your association up to this time the fact that lack of consideration has made them unmindful of what is involved in and what may be accomplished by cooperation and coordination of interests. The question of building up your association is, therefore, one primarily of education and organization.

"What is organization? It is the dynamic, essential force behind practically everything that is perpetuated through human endeavor. It is the basis for all successful operation. Both society and government are organizations. Churches are perpetuated through it; schools maintained as its result, and even the various diversified enterprises in the several sections from which you come, and in every mart of trade, are all conducted through organization. Destroy organization and the foundations of all these will crumble and disintegrate. A Manufacturers' association, therefore, is a sort of recapitulation of all private organizations represented in manufacturing enterprise—a coming together and welding of all the integral parts of a whole, strengthening each and maintaining a fortress of defense. It may be likened unto a mighty stream with many tributaries, where each mingles its waters to swell the crest that bears afloat those crafts of industrial justice having to battle with the pagan spirits of radicalism in the turbulent waters of socialistic impulse, where lust for political eclat is the ruling passion.

"At the risk of anticipating, in part, your legislative committee's report, I refer specifically to a measure proposed at the last session of the general assembly, the passage of which was earnestly advocated by the senate committee considering it, that committee having after public hearings, referred it back to the senate with unanimous recommendation that it pass. I refer to it specifically as affording apt illustration to prove how prone legislative committees are to consider proposals coming before them involving, as they often do, the very integrity and stability of enterprise.

"The bill referred to sought to make it mandatory upon manufacturers of fertilizers in the state of Georgia to brand separately each bag of fertilizer marketed in this state, showing the filler used, with the percentages of plant food contained therein. To one having any knowledge of the manufacture of fertilizer, this bill was not only obviously unjust, but its mandate, from a practical standpoint, impossible of compliance. A committee from your association appeared before the senate committee when the measure was considered. A perfectly clear presentation of the case from the standpoint of fertilizer manufacturers, was made to the committee. It was explained that plant food in fertilizer filler is a misnomer; that fertilizer filler contains no plant food; that filler in fertilizer is merely a vehicle for carrying the life-giving germs contained in a bag of fertilizer to the plant beds. This statement of fact is uncontrovertible, and the advocacy of such attempted legislation can only serve to illustrate the ignorance on the part of even well-disposed legislators in dealing with such questions, and their readiness to attempt corrections of supposed evils brought to their attention by misguided constituencies. Yet that same committee reported the bill to the senate for passage, and but for others in that body whose minds were open to conviction and who were willing to accept a clear-cut and unmistakable argument against the bill, it would have received the sanction of the senate.

"This specific reference I commend to the consideration of those not members of your Association, as affording a practical, concrete example of your and their necessity for maintaining a sentinel on guard, when matters of legislation are being considered. While the illustration used is one which commands more directly the attention of fertilizer manufacturers, yet the principle finds application to all other lines of manufacture. No single line escapes the modern tendency for statutory regulation. Your organization was not conceived in selfish purpose to serve one interest alone, but in the broad, altruistic purpose of mutual helpfulness, to conserve and promote the welfare of all engaged in manufacturing enterprises within the state. This upon the theory, as well as fact, that the evils of confiscatory legislation which may appear more applicable to one interest than to another are visited in less degree upon all, having the inevitable effect of checkmating the growth and development of your manufacturing enterprises, upon the well-being of which rests largely the peace and prosperity of all our people.

"The power of labor organizations, as at present consituated and maintained, is generally recognized: their tactics are known; and the experience of the industrial world with their machinations, when they artfully contrive to force obedience to the will of a pampered few by a host of credulous followers, blindly yet confidingly submitting to their dictum, has often been to witness spectacles of bloodshed and destruction, followed by waste and pillage. Indeed, no art of dissimulation is left unessayed by these would-be champions of toil to win the confidence of laboring classes in every walk of life, whether they be under peaceful enjoyment of satisfactory present conditions or not. In the light of these known conditions, is it not enough to daunt the judgments of thoughtful men, in reflecting upon at least the implied cowardice of capital and its lack of courage to meet an issue so squarely drawn and so justly demanding defense, to have it suggested that if we do this they will retaliate? Can there be any one so lacking in decision of character or weak in moral courage as not to dare stand manfully before a foe, with the shield of justice in his hand, and defy his aggressor? Surely no such one can be found within the borders of this state, and representing a manufacturing enterprise.

"And yet, a discussion of your organization in one quarter actually elicited an open confession of fear on the part of a prominent manufacturer that should the various manufacturing enterprises in the state, having interests similar to his own, which now he was pleased to acknowledge had not been invaded by the forces of organized la-

bor, affiliate with an organization that is known to be supported by other interests, where the influence of labor unions is felt, that it would direct attention to those interests not now affected, create animosity toward them, and hazard their safety.

"If this position, which was publicly taken, is to be maintained, it can only be maintained by discrediting the commonly accepted truth of fact that 'men follow the lines of least resistance.' For who does not know that where there exists a large and attractive field for exploitation, unrestrained in any process for taking advantage of it, the opportunity will not go unheeded! This is an obvious truth and contrary contention so utterly baseless as to carry its own refutation.

"There can be no mistaking of your purposes toward labor organizations or your attitude respecting practices they employ for the accomplishment of their ends. Your position is unequivocal. You do not decry labor organizations because they are organizations. You believe in organization, and recognize the right of labor to organize, the same as you recognize a similar right to yourselves. You wish to be fair with them, in expressing your purpose plainly and without guile; fair with yourselves, and honest with the public. You ask no special consideration because you represent capital, but simple justice because you are men. The surest way to attain such justice is through honesty of purpose and candor of expression.

"It is not necessary that you throw down the gauntlet in combat, but only appeal to the reason of fair-minded men, who must know that you can not, in justice to your interests and in consonance with sound business judgment, countenance any purpose on the part of organized labor to dictate the principle of 'closed shop,' which obligates you to the employment of only those who are affiliated with unions, and who qualify according to the codes of their orders; nor that injunction they often seek to make a condition of employment that you must use only those tools and instruments of workmanship that are the products of manufacturers employing union labor, and bearing its seal. No fair-minded man will reproach you for discountenacing these efforts to abridge your right of choice, no less than you will be upheld in your opposition to such practices as 'picketing' and 'boycotting.' These demands and practices are so flagrantly in violation of the undisputed right every one has to freedom of action, that a surrender to them on your part would be not only at a sacrifice of personal respect but that of moral character as well. You demand the right to choose according to your own judgment, and in that demand you are sustained by every code of morals that has been vouchsafed to man.

"In conclusion, you will indulge a prophecy. The present day members of your association may not fully realize it, but they are in a real sense pioneers. Great as has been the work done, and progress made in this state, both are but small beginnings in the ultimate accomplishments for the future.

"I need not remind you that Georgia can, from her soil, feed and clothe twelve millions of people. It is not improbable that your grandchildren will see that number of people within her confines. It requires no stretch of the imagination to picture in our minds' eye the magnitude of manufacturing interests in this state, when we consider the marvelous variety of nature within its borders, its soil resources, its mineral resources, its water powers fully developed, its farmers and manufacturers hustling with an industry that rivals the benighted toilers of Pharoah's time, all contributing to the wants of thirty millions in South Carolina, Georgia, Alabama and Florida. And yet, in all human probability, that condition is not more than seventy-five years removed from the present time. The wonderful history and growth of our middle west during the past seventy-five years is going to be duplicated there and triplicated here in the next seventy-five year cycle.

"When the burdens of your work bear heavily upon you, comfort yourselves with the thought that as your grandfathers wrought in faith laying the foundations on which your fathers and you have builded the great structures of today, so you too are working in the faith that your children's children will build on your work a civilization more beautiful, more enlightened, and more magnificent than even poets have ever dreamed, and which will endure through the aeons of time and change, because American men, Georgians, were so far-seeing and right-minded as to base their work on justice and service."

Following the report of the secretary, cards were distributed among those in attendance in order to secure a list for registration purposes. The next report on the program was that of the treasurer, H. E. Watkins, of Atlanta, which was read and approved.

Some Legislative Figures.

The next feature on the program was to have been an address on the subject "Organization and the Manufacturer," by James A. Emery, counsel of the National Association of Manufacturers of New York. Mr. Emery, owing to a death in his immediate family, was unable to be present. However, Mr. Emery saw the Field Secretary, of the National Association for Industrial Defense, Earl Constantine, and asked him to express in person the personal regret of Mr. Emery. Mr. Constantine was present, and at the request of President Glenn he took the floor and made some appropriate remarks, saying in part:

"You have perhaps only a faint impression or knowledge of what we are doing in legislation in this country, when it comes to the question of volume. If I may indulge in some general figures for a minute or two, I think you will perhaps be interested. Professor Dickey, of London, recognized as the best authority in the world today on the question of legislation, in some statistics which were prepared last year, found that in the five great countries of England, France, Germany, Italy, and Austria, in the year immediately preceeding the war, which was the last normal year, there was less legislation presented for consideration than was actually passed in that same year by the National Congress of this country. When you realize what is the difference between the volume presented and the volume enacted, you will begin to see to what extent those figures are magnified. In that same year—take the Parliament of Great Britain—there was a total of some five hundred odd measures presented and 230 some odd measures actually enacted for the government of the empire. While during the same time in the United States Congress alone, and disregarding our 30 odd legislatures, which met during that year, we actually had introduced over 30,000 measures, and we enacted some seven hundred measures for the guidance and for the ruin(?) of the people of the United States! If I take five years—the period of 1909

to 1914 inclusive—the figures, which we have compiled, show that there was a total of measures in congress and in legislatures introduced of over 750,000. 750,000 in the five year period, and actually we enacted and placed on the books of statutes some 78,000 measures for the guidance of the American people. And in one year—the last normal year I mentioned, 1914—in our 32 legislatures meeting that year, we enacted over 16,000 measures, and only a few hundred faced the veto and some 15,000 became laws in one year!

"So business is confined and circumscribed by laws national, by laws state, by laws municipal, until today a business man is almost compelled to have a dictionary and encyclopedia with a cross index in order to take his next step without violating some statute passed over night. The Mills of the Legislatures, like the Mills of the Gods, are grinding, only they differ in that they grind very fast.

"Still these problems, these large national problems, call for the establishment of a national council, and inasmuch as you are one of the bodies which today constitute the counsel, you are interested to know that we have some 240 odd organizations similar to yours located in 37 states, which use the council as their common medium for legislative information on federal matters.

"The day has come for cooperation, and I am glad to say that we are securing that cooperation more and more. In my travels throughout the country I find a quick response not evident a few years ago. Organization is sweeping all over the country, and we are getting results. We are going to face a condition, when the war is over, that is probably going to be very acute and serious; at least that is the judgment of manufacturers all over the country. The question of dealing with labor is one on the horizon line in the South rather than in the North. In the North we have had this for a long time, but you men in the South have the problem coming. You have not faced the character of organization which we have been facing up in the North, and wisdom would dictate to you that, rather than wait until the cyclone breaks over your heads, you should watch the cloud on the horizon line and build your cellars in advance and be protected.

"The best protection you can have is preventative rather than curative. The treatment you give your white labor today, the fairmindedness with which you treat them, will do much to prevent such organizations as I have referred to, whereas if you lack in those essential preventative measures today, you will certainly face a problem that you will have trouble in handling. I have great faith that you will handle your problems in an intelligent and a successful manner."

Foreign Trade.

The next address on the program was by C. L. Chandler, the export trade representative of the Southern Railway Company with headquarters at Chattanooga, Tenn. Mr. Chandler discussed the many opportunities present for the manufacturers of the South in developing export trade for the future, and said in part:

"First of all, I want to felicitate with you upon the great advance this state is making in manufacture. Georgia ranked 24th in 1909, and now stands 22nd, ranking such states as Tennessee, Kentucky, Alabama and South Carolina. Georgia is third in manufacturing in the southeastern states, coming directly after North Carolina and Virginia. It has made a greater growth in manufactures in this period than any other southern state except North Carolina. When we remember that that was a time of great depression, the showing of the great inherent wealth of this state is remarkable.

"Today there is not a country in the world, where the products of Georgia are not sold. It takes wire made by the president of this organization to wrap the cotton of the world. The man in New Zealand walks around in Georgia hosiery. From the mills of Augusta go cotton fabrics to almost every country in the world. The world cannot live without Georgia. The South has risen again after years of darkness to supply not merely a place in the trade of the world, but a commanding place in the trade of the world, for today the world cannot live without Georgia.

"For the first time in the history of this country, we are now using more cotton in the United States than we are exporting. That is a very significant fact. Since the war broke out in Europe, nearly three millions of new cottton spindles have been established in this country. We have made more spindles between 1910 and December 31st, 1916, than were made during the whole ten year period between 1900 and 1910. At the present time we have 33,200,000 in active operation in this country compared with England's 53,000,000, whereas 10 years ago we had 26,000,000 compared with their 50,000,000.

"This brings us to a very important phase of this matter, namely, the export of cotton goods. Until very recently, the United States had so many people to clothe and feed in their own country that we were not able, with the facilities we had to take our share in the export trade. We were not able to go after the export business as we should. For the eleven months ending November, 1916, of 556,000,000 yards of cotton cloth exported, over 60 per cent of the total were dyed, colored or printed, while in 1906, ten years previously, only 15 per cent of colored, was prepared for the foreign market. What we want to get here is the finished product in the South, so that the goods will not have to be sent to New England or to any other part of the country before they are finished. That South America is occupying the greatest position in our foreign market is apparent from the fact that in 1906 only 7 per cent of the total went to South America, while for the eleven months ending November, 1916, the amount sent there was 23 per cent.

"In my recent journey around South America I had the privilege of investigating markets for a great many articles made in this state. I found an amazing demand for almost every kind of cotton goods, but I also found that our people were not putting the proper amount of attention onto their business.

"The greatest competitor for South America, where cotton goods are most in demand, would be England, which exports many millions of yards of cotton goods each year. Drills, ginghams, colored suitings, etc., seem to be in great demand. A mill I happen to know in North Carolina, which is on the Southern Railway, and which took advantage of what I was doing, now has business amounting to several hundred thousand dollars which formerly went to English manufacturers.

"When we become equipped to handle that business, the

South should dominate it. This South American trade should develop the southern ports. Mobile, Savannah, Charleston, and Brunswick should be developed to the position as ports which they formerly occupied. And that brings me to another point, which I hope will be seriously taken up, and that is the question of ship building in the South. We have today the worst marine laws of any country in the world. I wish the Japanese would send some missionaries over here to teach us something of their methods. If we had maritime legislation and laws as good as the Japanese have, you wouldn't see our cotton goods crowded out of the competitive cotton goods markets of the world. You can go to the Department of Commerce and Labor, and ask for R. M. Odell's report from China on cotton goods, and from India, and see how Georgia goods are being crowded out there because we have absolutely no steamship lines going out to those countries, and our legislation prohibits the landing of a steamship under the American flag with any degree of profit. That is one of the most serious problems we have got today, and it is up to you to put these things on a business basis. I am not criticising any party, because these things ought to be taken out of politics. But if we cannot have some kind of American merchant marine after this war, we are going to get it "in the neck."

On a motion from Lee M. Jordan, a message of sympathy was ordered prepared and forwarded to James A. Emory of the National Association of Manufacturers. The morning session then adjourned.

Afternoon Session.

Promptly at 2 o'clock a large number of private automobiles were in waiting to take the members of the association to the Savannah Yacht Club, where a delightful oyster roast was promptly served. This was a most enjoyable feature of the entertainment.

After partaking of refreshments, the automobiles were again brought into service and the entire party carried around through Thunderbolt, Isle of Hope and other points of interest in and around the city. Bethesda Orphanage, founded in 1740 by George Whitfield, was visited, and a very interesting historical sketch of the institution was given by Mr. Burrows, who is in charge of this well known institution. He also gave a brief outline of the character and scope of the work done at the orphanage.

The very large and new terminals of the Ocean Steamship Company and the Central of Georgia Railway Co., were visited and inspected, as was the plant of Mayor W. J. Pierpont, known as the Pierpont Manufacturing Company. This latter is a large woodworking and box making plant where the various machines were exhibited in operation, from the logs in the river to the finished product in the warehouses.

Adjoining the plant of Mr. Pierpont is the plant of a new corporation known as the Savannah Ship Building and Transportation Company, where two wooden coasting schooners of approximately 1700 tons each capacity were being erected, while alongside the keel of another similar vessel was being laid. After the long ride the delegates were returned to their hotels, tired, but happy.

The Second Day.

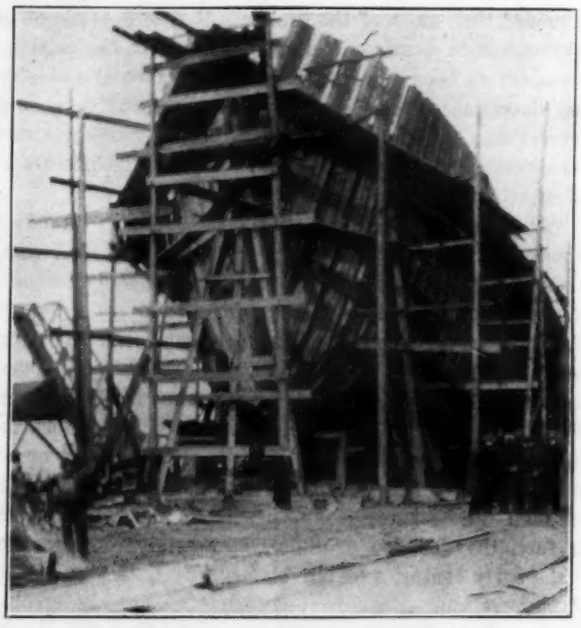
About 10:15 A. M. on Thursday morning President Glenn called the second business session to order and introduced W. L. Stanley, Assistant to the President of the Seaboard Air Line Railway, who delivered an address on Industrial Citizenship.

Mr. Stanley spoke in part as follows:

Industrial Citizenship.

"Webster defines a citizen as 'a member of a sovereign state or government entitled to its protection.' The right of franchise does not constitute citizenship any more than a vote represents, in every instance, the exercise of judgment or the display of wisdom. We desire to consider and determine whether or not our industrial enterprises are citizens of the state and nation in which they have their domicile, and in order to do so it will be necessary to determine what elements constitute citizenship, and whether or not these elements exist in our industrial institutions.

"Citizenship is a misnomer unless it embraces all those essentials of character and intelligence that tend to uplift the community and to advance the interests of the state. One of the first elements of citizenship is knowledge, not necessarily the accumulation and mental storing of the information contained in school books, nor the acquisition of a degree from some college, but that breadth of conception that realizes the relationship that each individual bears to every other individual and that ascertains and knows its true relation to society, and which has a thorough insight into the value of a united effort for a common destiny.



THE FRAMEWORK OF ONE OF THE VESSELS BEING BUILT AT SAVANNAH.

"In this twentieth century the injunction to 'know thyself' will be useless unless there is coupled with it a desire and determination to know thy fellow man. In the intricacies of our social and industrial life every unit of society bears some relation to every other unit, and the successful business man is he who studies and knows these relations of units and uses them in harmonizing his own endeavors with those of the remainder of mankind. Hopeless indeed is the man who is content to live within the charmed circle of his own existence, who, heedless of the effect of his own life upon others or others' lives upon him, endeavors to eke out an existence. Those who have attained in any profes-

sion or business the greatest degree of success have been the ones who, while thoroughly fortified with a knowledge of their own affairs, involving all of their details, have at the same time known in a large degree the methods of their fellow men, and have profited both by their success and their failures.

"In industrial life no asset is more valuable than knowledge of the resources of the state in which the industry may be located, a thorough acquaintance with the sources of supply, with the markets of the world, and with its means of transportation. This knowledge also involves a thorough understanding of the laws of cause and effect, and no business, however successful it may be when measured by the standard of dollars and cents, is in the broad sense of the word successful unless it takes into consideration the effect that it has upon the welfare of the people, the advancement of civilization, and its relationship to the destinies of the state. Knowledge applied introspectively involves a sincere sympathy with and a desire to benefit and improve those who may act in the capacity of servants. I am persuaded that many of the problems that now confront us would never have arisen had those serving in the capacity of employers been more interested in the mental and physical development, as well as the happiness of those who served them, and had not regarded them as mere creatures of commerce whose value was exhausted in the process of industrial production.

"Another characteristic of good citizenship is unselfishness. Along the highway of time can be found thousands of business wrecks sacrificed to the goddess of wealth, whose motto has been the destruction of every opponent that stood in the way of their own aggrandizement, or that closed to them the doors of their own ambition. 'No man liveth to himself and no man dieth to himself,' should constitute a part of the creed of every business enterprise. That man, that business most successful, is the man or the business that realizes early in life the fact that more than one man can be successfully engaged in the same venture. In fact, the doctrine of industrial annihilation practiced in the early centuries of our history has given way to that of cooperation. Business unselfishness not only involves freedom from doing a wilful harm to another, but the actual extension of aid, always moral, sometimes financial, to the enterprise that may be struggling for existence or that temporarily finds itself in a position of embarrassment.

"The truth of this assertion can perhaps find no better illustration than in the present condition of our transportation facilities. Unfortunately many well meaning but misinformed citizens have held to the opinion that cheapness of railroad transportation and not efficient service is the thing to be most desired. This opinion has been tinged with selfishness and has proceeded upon the idea that, while it is proper to get all that you can for your own wares, it is perfectly legitimate through the medium of inadequate compensation, to cripple all others who may depend upon you, or, even who you may be dependent upon. If there ever was a situation where interdependence exists and where cooperation is so essential it is that existing between the industrial enterprises of this country and its transportation lines. Neither can reach the zenith of its possibilities nor fulfill the measure of its responsibilities to the public until both realize that the expansion and prosperity of neither is possible without the assurance of a fair and just remunerative compensation for the services rendered by each.

"Every student of affairs knows that investment in railway securities is no longer attractive to capital. He should also know that new railroad building has been at a standstill for several years, and that for the want of money with which to build new lines some of the most fertile and attractive sections of this country remain undeveloped. That the United States has outgrown its present transportation facilities is hardly worthy of debate. That this condition may be remedied without placing an undue burden upon anyone is demonstrated by the fact that the railways in the United States are receiving for the handling of freight per ton mile less than the railroads of any other country in the world.

"If the railroads of the United States in 1915, instead of receiving 7.42 mills per ton mile, had received five-tenths of a mill more, it would have represented an increase in the earnings of those railroads of over $135,000,000, and, at the same time, have only increased the cost to the public for transporting a ton of freight 156 miles (the average distance that it was hauled) eight cents. With all the earnestness at my command, I beg to appeal to you intelligent men of affairs, as to whether or not, for the sake of saving eight cents in transporting a ton of freight, it is the part of wisdom to cripple the transportation lines of this country, upon whose promptness and efficiency you of all others are most dependent; and may I not suggest the thought that this situation presents a case in which the doctrine of business unselfishness may find its first application.

"Along every highway of trade and commerce there are points where the roads converge and then blend into a broader road, which has for its goal a common purpose. This association of yours is a monument to the fact that the free exchange of ideas and of methods is essential to success, not only to the weak, but to the strong man. In the matter of economic production, in the intelligent distribution of products, knowledge of the sources of supply of raw material, and of the markets for the sale of the finished product, there exists the necessity for unity of purpose and conservation of effort that could not be possible were each individual unit of your organization to clandestinely seek to produce and sell, regardless of the existence of the other units. Unselfishness does not necessarily mean freedom from an expressed effort to live to one's self or harm another, but often involves the extension of aid and the helpful hand to the weaker brother when the occasion for such help may develop. There is never a bank or industrial failure but that such failure affects some other bank or some other industry. There is never a scandal in the management of any great business enterprise but the finger of suspicion instinctively points to every other business enterprise. There is never a system polluted by selfishness but that the same germ that caused the pollution is not looked for at the fountain source of every other business, regardless of how exemplary may have been its conduct or how honestly its affairs may have been administered. To apply, therefore, to the misguided and reckless member of our industrial organizations the brakes of common honesty, to extend to him the helpful hand, or to voice the warning of good fellowship, is neither a crime nor a hostile act.

"Good citizenship builds not alone for the present, but for the future. Its imprint for good or evil does not pass with the setting of the sun, but is indelibly stamped upon the happiness and the welfare of generations yet unborn. The man or the business whose highest conception of his or its existence is the acquisition of a success or a fortune that shall proclaim him, for the hour, a genius, or a giant of finance, has never grasped the true meaning of life. Had Washington been satisfied with a peace with the aborigines of this country whose only consideration was the safety of himself and his followers, or had he bartered with a foreign power for a personal security that did not contain the horizon of a free people, we would probably today be living in a land half-savage, half-civilized, where the predominating element of our character would be self-preservation. Had the signers of the Declaration of Independence been men who were satisfied with being permitted to live out undisturbed their three score years and ten, they would, instead of giving expression to that immortal document, have forged upon the hands of free unborn Americans the chains of an eternal slavery to England. Had Custer not had a vision of a great Western Empire, perpetuated and dominated by a free and progressive people, he never would have offered himself as a sacrifice to Indian savagery, but would have retired across the waters of the Mississippi to a place of personal security.

"These men, sacrificing self-contentment, scorning self-ease, looked into the unexplored future and dreamed of a nation second to none on earth, and in enduring hardships, conquering dangers, uplifting the flag of civilization, breathed upon their children yet unborn the spirit of a life whose greatest success lay not in its own protection, but in building for those yet to come a national existence that would contain the elements of peace, happiness and prosperity which we now enjoy. And so, today, the example and the blood of those forefathers cry out to us that life is a failure to the man who believes that his influence ends with the grave. The lesson is no less applicable to those who live now than it was to those who lived in the days of the infancy of this republic.

"But you may ask is there a thought in connection with this that is applicable to our industrial life? Unhesitatingly, yes. We have been, of all the nations of the world, the most careless and the most wasteful. In order to meet the requirements of our present personal necessities we apply the axe to the tree, the shovel to the mine, the plow to the soil, without even a thought of future generations, when, through our wastefulness all these natural resources shall have been exhausted. In some particulars we resemble the army worm, whose work is only successful when it leaves in its wake a path of destruction. I doubt seriously whether the man who has no thought of the material welfare of his progeny, nor who has no desire for his children to enjoy blessings of which he is deprived, and who does not plan his own life with this as a controlling motive, is worthy of existence. The industrial world should not wait for the strong arm of the government to reach out, with an imperial command, to conserve the resources of this country, but should exercise its inventive genius and preservative skill to take for our present use no more than is necessary and to leave for those who follow after us not only material resources, but the heritage of the wisdom of conservation, in order that the same lesson may be transmitted by them to still other generations. May I not suggest in this connection the passing thought that it is well worth your effort, as I know it will be your desire, to give to the world at large, through the machinery of your organization, the lesson that in Georgia there are manufacturers progressive enough to serve not only their own day and generation, but who are mindful of the greater Georgia that is yet to be.

"No citizen is a good citizen that is not thoroughly imbued with patriotism. Love of country and veneration for its flag has been through all the ages and will continue to be through the years to come the cornerstone of national existence. Let the war clouds gather or the hand of the aggressor be raised in threat against our civilization or institutions, or our rights infringed upon, and, to a man we will take up the sword to defend, to the last drop of blood, if need be, the maintenance of our free institutions and the civilization of which we boast. Is there in our industrial life such patriotism? Hardly had our president, exhibiting a patience for three long years, that, if not now, will in the future command the admiration of the world, laid down to that Madman of the East the ultimatum that an American citizen should be free and untrammeled in

W. L. STANLEY.

his peaceful pursuits, not only in his own land but upon every sea and in every clime; and that his lust for blood and conquest could go no further, certainly not to the extent of invading the rights of a freeborn American, not only thousands of men in every avocation of life, the rich and the poor, the young and the aged, volunteered to lay upon the altar of their country their services and their lives; but also our industrial institutions pledged to the support of our President their shops, their factories, their products, and their time without compensation, in order that the world might know that manhood in this country is paramount to prosperity and that our honor, once assailed, would draw to its standard not only the lives of our citizens but their possessions as well. Let war come, and I am sure that I am not mistaken in asserting that every

member of this association would gladly place at the disposal of his government every vestige of property in his possession that would assure the success of American arms. This is the industrial patriotism of which I speak. This is the patriotism that I believe is present in every throb of the engine, and is as indelibly written upon the furnace smoke as the motto 'America First,' is inscribed upon our hearts. If war comes (and God forbid) we will demonstrate to the world and to those of our citizenship who may have in the past entertained a doubt upon the subject, that the patriotism of our industrial life is just as broad and just as unselfish as that which beats within the breast of every free-born American.

"Do our industrial institutions possess these essentials of citizenship? What I have already said should indicate to your mind that I believe that they do, and that, if knowledge, unselfishness and patriotism are some of the elements constituting citizenship, our industrial organizations possess them to a large degree.

"Let us turn for a moment from these essentials of good citizenship and consider the other definition of the word citizen, namely: 'One who is entitled to his government's protection;' and also in passing determine whether or not our industrial institutions, especially those in the South, should be accorded by our government, not so much for their own good, but for the general welfare, any special degree of consideration or protection. We have been recently passing, and I trust we are now near to if not at the end of it, through a period of hostility towards anything that represented wealth and especially the concentration of wealth. We have been almost led to believe that, while a dollar is a good thing, that the combination of many dollars constitutes an enemy that should be attacked from every angle and with every weapon.

"Unfortunately, there are some things in a democracy that are dangerous. One of these things is that 5 per cent of the people do the thinking for the other 95 per. cent. Another thing is that the ballot is not always cast after mature judgment and as a representation of the wisdom of our people, but often bears the indelible impress of prejudice and passion. These conditions can largely be attributed to the intrigues of the politician whose object is not always the good of the people whom he seeks to serve, but his own preferment and to that end he has, in many instances in the past, appealed to the lower, sordid instincts of the populace and often created conditions in order that his own political life might be perpetuated. Let us trust that the day of the politician is past, or passing, and that we are returning to the time when men stake principle above every other consideration, regardless of the effect that it may have upon their personal careers, and that we are now developing in this country statesmen who will take their places in the Hall of Fame alongside of Washington, Jefferson, Lincoln and Lee, whose examples should ever remind us that the destiny of a nation is not measured by the exigencies of the moment, but is founded upon the peace, prosperity and happiness of a people whose ideals embrace something of the spirit of the 'Sermon on the Mount,' and whose eternal slogan is 'a government of the people, for the people and by the people.'

"May we not believe that the day when wealth accumulated and honestly administered through the channels of our honest institutions, for the good of the people will no longer be attacked simply because it represents an accumulation of dollars, but when it will be accorded in the pursuit of its legitimate purposes, the same protection that is now guaranteed to the humblest citizen, and have we not the right to expect that these industrial enterprises contributing so largely to our welfare, giving employment to so many of our people, and finding a way for the development of our natural resources, shall be accorded the equal and just protection of our laws? In the state of Georgia there are more than 4,000 manufactories, representing an invested capital of $258,000,000, employing more than 105,000 men, at an annual wage of $38,128,000, with an annual output of the value of $253,000,000, and paying to the state, counties and cities in which they are located, more than $739,000 a year in taxes. Are not these institutions, with this record, contributing so much to the support of the government, entitled to be classed as its citizens, and also worthy of the state's protecting arm?

"If these institutions are to approximate the zenith of their usefulness or keep pace with similar institutions in other countries, they must be accorded the same rights of citizenship that are today enjoyed by the merchant, by the farmer and the artisan. Yea, in this Southland of ours it occurs to me that we may be required in the due exercise of wisdom, to go a step further and through the medium of a proper tariff protect the existence of some of those industries whose very life will be hazarded at the close of the present war by Europe's cheap products that must, it seems to me, be cheap in order that the industrial ground lost through three years on the battle fields may be regained, and which has developed among the women of that continent an abundance of labor, made possible by their having to supplant the men who have been at work elsewhere. I would not be understood in this land of Democracy as being a traitor to its cause. I was born in the South, and at the same time that I learned at my mother's knee, 'Now I lay me down to sleep,' my father instilled into my youthful mind the fact that nearly all, if not all, Southern gentlemen were democrats. The tariff, however, has practically ceased to be a national issue. It is now a local question, and I believe that the Democratic party, allegiance to which most Southerners bear, will be wise enough and broad enough to discard any preconceived idea that may have existed years ago, and as the government that is closest to the people, provide such protection, and only such protection, as will insure and secure the future development of our industrial enterprises.

"In conclusion, may I not indulge for a moment in the discussion of what is to be the attitude of our industrial institutions to the public, if we are to be, as it seems to me we should, accorded the privileges and protection of citizens. In the past some of our great corporations and industrial institutions sowed unwisely. Not to admit this to be the fact would be a reflection upon the intelligence of the speaker as well as that of his audience. But, I submit that from this sowing there has already been reaped by the guilty, as well as those not guilty, not only one harvest, but many harvests. Speaking from an intimate acquaintance with many of the men who control these great enterprises, I assert without any fear of contradiction, that the big business of this country is being conducted with scrupulous consideration for the principles of honesty and due

regard to the rights of all the people. We should never again, through the medium of objectionable and obnoxious lobbying seek to influence legislation. We have the right and should be accorded the privilege of being heard upon any matter of legislation we believe will adversely affect our interests. Except to see that the truth is published with reference to the management of our industrial affairs and that the people are educated to know both sides of every question where our interests are involved, we should never participate in politics nor seek the election of any man whose principal commendation is that he will probably be favorable to our activities.

"Our efforts should be to see that clean men, big men, intelligent men, honest men, represent us in the making of our laws; and when such men, whose honesty is their chief virtue, have been elected, we should be secure in the knowledge of the fact that, if they are wrong that they are intelligent enough to be set right, and if they should momentarily depart from the path of equal justice to all, that an appeal to their honesty and their intelligence *will* set them right.

"The corporate interests of this country do not seek the right of franchise; nor have they any desire to dictate the policies of the government. They do expect, however, that those that have the right to vote will cast their ballots with due regard to the proper protection of every citizen and his interests, and that their ballot shall not, in any sense, represent the seeking of selfish ease or gain. The industrial citizenship which I today advocate is a citizenship that has woven into the web and woof of every corporate existence the word 'Character,' that lives not alone for its own aggrandizement but exists for the alleviation, through the combination of wealth, of the suffering of humanity and the advancement of its ideals; that realizes that in the last analysis the country is but a total of its citizenship and that anything that harms a single citizen, or a single legitimate interest, is not worthy of existence. An industrial citizenship to whose ranks no president, manager or officer can be admitted whose chief accomplishment is not honesty of purpose and who is not willing to make bare to the world to be tested by the judgment of an impartial public, his every act and his every deed."

Committee Reports.

The next on the program was the report of the Committee on Press and Publicity, and as D. B. Osborne, the chairman of this committee, was unable to be present, the report was read by Secretary Horne. In part this committee recommended:

"Your committee does not believe that there is any more important function to be recognized by your association than the institution of a well devised plan for projecting a wholesome propaganda of publicity, maintaining a central fountain head for the dissemination of news, which will constitute a channel through which the views of manufacturers, whether upon questions wholly of a public nature, or questions to be regarded as of quasi-public importance may be properly placed before the public.

"Adverse public opinion toward industrial enterprises is reflected more upon manufacturers than upon any other class of business men, involving directly not so much their relations to the public at large as those particularly between capital and labor, or between the employer and the employed. When one class of our citizenship seeks to create a sentiment favorable to a proposition that is to govern all classes, and that sentiment is taking form in the public mind, it is but little short of industrial suicide for that portion most vitally concerned to remain inactive.

"The thought paramount in the minds of your committee is connected with the subject of legislation, and it may here cite as an index to what it has in mind, the examples of many states where workmen's compensation laws have been enacted. It is no idle prophecy that portends legislative action upon this subject in Georgia. It is being preached everywhere from the housetops, and state after state is following the examples of previous states that have enacted such legislation. Your committee does not argue the merits or demerits of any principle that may be involved in the proposition. It contents itself in the belief that all will agree that it is a question for the wisest statesmanship, the most careful consideration and only to be acted upon after the most mature deliberation."

Following this came the reading of the report of the Legislative Committee, of which S. A. Carter, of Atlanta, was chairman.

The next item on the program was the report of the committee on taxation, which was read by M. E. Dyess, of Augusta, the chairman of the committee. Mr. Dyess had gathered together some very interesting information in regard to taxation, which will be discussed more in full elsewhere in COTTON. The reports of these three committees were all accepted and the reports incorporated in the minutes of the meeting.

President Glenn then introduced W. H. Shelton, at the head of the Department of Commerce at the University of Georgia, who spoke on the subject of vocational education. At the close of Professor Shelton's remarks, President Glenn offered some further explanation and discussion in reference to what is known as the "Hughes Bill" before the National Congress. In his opinion this is a very constructive piece of legislation and a project that will ultimately result in a great deal of good for the manufacturing interests.

John B. Moss, president and treasurer of the Athens Manufacturing Company, at Athens, Ga., in a discussion on the address of Professor Shelton, spoke very highly of the work being accomplished at the University, and particularly of the work of Professor Shelton, at the head of the School of Commerce.

"Along the line of accounting," he said, "I was glad to hear from the representative of the Ad Men's Club as to the work they are doing. The National Association of Credit Men are taking up this matter of such vital importance to the credit departments of our institutions (and when you strike the credit department you are getting down close to the heart throb of every institution), and there are sent out to their members sets of forms in order to gather information to show where there is efficiency and show where there is inefficiency, so that people who think they are posted as to their costs, can readily get at the real cost. Each member is required to take these forms and get in touch with some representative business concern and see if their methods will comply with the standard put out. When the thing comes from three distinct sources at the same time, the government enlightening the commercial world on

cost systems, our educational institutions, the Ad Men's Club and the National Association of Credit Men, all working to the same end, there must be something vital behind the movement. This work ought to be encouraged and ought to be co-ordinated."

Then came a period of open discussion in which all the members present took part.

A suggestion was made by John B. Moss of Athens, tending to add to the efficiency of the organiation by this installation of a Field Secretary to go to every manufacturing concern in the state in a missionary capacity and bring them into the association. He further suggested that if the executive committee of the association felt that they were not warranted in doing this on account of the expense, that they might ask the members of the association, perhaps to the extent of their membership dues, to underwrite this expense and to guarantee any deficiency that might arise. He expressed his firm conviction that the increase of membership from such a campaign would be very much more than the amount expended in conducting it.

Another suggestion made by Mr. Moss, tending to result in good to the association, was that a committee on uplift work be appointed. "Uplift work is going on," he said. "We have heard it from Mr. Carter and Mr. Scott, but a great many of us who in smaller mills have taken hold of this work only in a limited way, should learn from them and be inspired by what they are doing to undertake the work and do it more efficiently."

Col. J. Rice Smith of Augusta, also urged the formation of a membership committee or some other method to largely increase the membership of the association. He thought such an increase in the membership, thereby strengthening the association, was very important to the industrial interests of the commonwealth, and that not all manufacturers in the state realized that every time the Legislature in the state met their industries were placed in peril.

"You gentlemen know how your interests have to be guarded," he continued, "and it is not criminal; it is not a disposition to do you any harm. It is absolute ignorance. It is a man trying to run your business that doesn't know a continental about it." Col. Smith told a number of stories to illustrate his point, and indicated that too many Legislators presented bills viewed from their own individual standpoint rather than from the greatest good to the greatest number. He stated that much that comes before legisatures today is absolutely on the same basis and in the same class. Continuing on the subject of increasing the membership and strengthening the association he said:

"I believe that your men are not paid enough for the work that they do. You would not do it, and especially you would not do it if you had to sit down week after week and pore over the many vexing propositions that come up from day to day, and particularly in a day like this when everything is moving forward. We are living in the most monumental period of our history. I cannot impress it upon you too seriously that this period of our history is most momentous, educationally, politically, industrially and commercially, and the industrial interests of this state should get together with the members of this organization for the greatest effort they have ever made."

This open forum discussion with five minutes talks by members, continued for something like an hour, after which the report of the Nominating Committee was heard, and the following officers elected:

President—Thomas K. Glenn of Atlanta, re-elected.

First Vice President—Samuel A. Carter of Atlanta, re-elected.

Second Vice President—H. P. Meikleham of Lindale, re-elected.

Third Vice President—W. J. Pierpont of Savannah.

Treasurer—H. E. Watkins of Atlanta.

Five new members of the board of directors were elected, as follows: W. J. Pierpont of Savannah, W. B. Willingham of Atlanta, A. V. Cortelyou of Marietta, A. D. Schofield of Macon, F. Edward Lummus of Columbus.

Following the election of officers came the report of the Committee on Resolutions, and the adjournment.

At 2 o'clock in the afternoon the members and guests of the association were entertained at a luncheon by the Greater Savannah Commercial Club in the tea room of the Hotel Savannah. After the luncheon short addresses were made by Miss Helen Cinnamond, secretary of the Associated Charities of Savannah, Col. J. Rice Smith of Augusta, Secretary W. W. Horne of the Association, Mayor Pierpont of Savannah, and Earl Constantine of New York. The balance of the afternoon was spent in visiting places of interest about the city by small groups or individual members, until time to board the special Pullmans for home.

The Trend Toward Concrete Buildings.

The present trend of industrial building construction is indicated by a recent investigation made by W. P. Anderson, president of the Ferro Concrete Construction Co., of Cincinnati, and presented in a paper before the recent annual meeting of the American Concrete Institute in Chicago.

The results of Mr. Anderson's investigation were drawn from inquiries made of the leading industries, manufacturers of all classes of metal goods, brewers, manufacturers of textile, paper, leather, boots and shoes.

Of the representative manufacturers who were requested to furnish data 370 concerns contributed information covering 1230 buildings erected during the period covered by the investigation. These varied greatly in size, use and construction but all were used for industrial purposes.

The returns year by year were graphically represented in an accompanying chart for the four major classifications—all wood, brick walls (steel frame), mill construction, concrete construction. Of course, the abnormal disturbances during 1914-16 account for the great fluctuations in that period. But even up to and including 1913, the advance of concrete construction and the relative decadence of other types are distinctly noticeable. The comparative growth of the various types of building construction is most strikingly shown by comparing the periods 1905-10 and 1911-16. In the former, the returns cover 7,014,218 square feet of mill construction and only 5,512,579 square feet of concrete construction, but in the later period the area of concrete construction jumped 327 per cent, to 16,926,152 square feet, while the mill construction showed a bare increase of about 10 per cent to 7,709,469 square feet. The estimated area for 1916 was used in making up all of these comparisons.

Mill Conditions and Market Reviews.

Southern Mill Situation.

The Union Bleaching and Finishing Company at Greenville, S. C., at a meeting of the board of directors held early in the month, authorized an extension to the present plant, to cost at least $200,000. It is proposed to construct wings to the present building, arranging them so that full advantage may be taken of the present plant and offer opportunity to go on with further extensions if they should become necessary. The officers of this concern are John W. Arrington, president; Ellison A. Smyth, vice-president; John W. Arrington, Jr., treasurer; and R. W. Arrington, secretary, all of Greenville.

The proposal to establish a textile school at Greenville, patterned after the Textile Industrial Institute of Spartanburg, has met with an enthusiastic response from the people of Greenville. An endeavor is being made to pass a bill authorizing a state appropriation of $15,000, and if this is done it is possible that a substantial amount will be raised by public subscription in the vicinity of Greenville to aid in establishing this educational proposition.

The McGee Manufacturing Co., of Greenville, manufacturers of cotton and wool plaid blankets and cotton waste yarns have added 2,000 spindles to their present equipment. This addition does not require additional buildings or other construction.

A wall at the Fairmont Cotton Mills, which is located eight miles from Spartanburg, S. C., collapsed on February 15th. This is said to have been caused by the bursting of the flume carrying water from the dam to the water wheel. The building was an old brick structure, and employed approximately 175 persons. One person was killed and eight others injured at the time of the accident. This mill is owned by Frank E. Whitman of New York.

The Hickory Spinning Co., of Hickory, N. C., has purchased a 23 acre site in West Hickory, on which will be built the new mill recently organized by Hickory people for the manufacture of cotton yarn. The building is to be begun as soon as material can be delivered. G. N. Hutton is President; J. D. Elliott, vice-president; and H. J. Holbrook, secretary and treasurer. The board of directors includes these officers, and also A. M. Kistler of Morganton, K. C. Menzies of Hickory.

George H. Lanier, vice-president and general manager of the string of mills at West Point, Ga., has awarded the contract for the erection of the new weave room at Lanett, Ala., and the cloth room and bleachery of the Fairfax Manufacturing Co., at Fairfax, Ala., to T. C. Thompson Co., of Charlotte. Construction will be begun immediately and the buildings completed by August 1st.

Work has been begun on the new spinning mill which is to be built as an addition to the plant at Mill No. 1, Fort Mill, S. C. This spinning mill will be a building two stories 200 by 150 feet in size with a picker room addition 85 feet, and when completed will have a capacity of 15,000 spindles and complementary machinery. This plant is equipped with a dye house and finishing plant complete for the manufacture of ginghams. Col. Leroy Springs of Lancaster, S. C., is president.

The Fulton Bag & Cotton Mills of Atlanta, Ga., are improving and adding to their mill village; 120 cement houses are to be erected, and such of the old houses as are to remain, are being remodeled and large porches added. These will be repainted.

A new school building to cost about $10,000, is being built at the Eva Jane and Sally B. Mills at Sylacauga, Ala. These mills, together with the Central Mills, are planning to build a hospital to be used in connection with the mills and mill villages, and work on this will be commenced in the near future. A new supply room is being built between the Central and Eva Jane Mills. Sixty new houses have recently been added to these three mill villages.

The Baldwin Mills at Chester, S. C., are erecting a number of additional cottages for their operatives, and have recently painted all the old cottages. Eighty-six hundred spindles and 150 looms are being added to the plant as fast as deliveries can be made.

The new warehouse at the Rhodhiss (N. C.) Mills is practically completed. It is located forty feet above high water line, where it will probably be out of the way of future floods. Material for the new steel bridge has also arrived, and this will doubtless be in place soon.

The Strickland Cotton Mills at Remerton, Ga., have equipped their mill village houses with running water furnished from an artesian well near the mills. It is reported that they are planning to build, in time for use this summer, some bath houses equipped with suitable showers.

M. B. Melendy, president and general manager of the Cherokee Spinning Co., of Knoxville, Tenn., advises that this new mill is being equippel with 5040 spinning spindles, and 2520 twister spindles, H. & B. machinery throughout, with the exception of the comber equipment, which is Whitin. The winder is from the Foster Company. The spoolers, reels and ball warpers are from the Draper Corporation. The mill will make an average of 60's 2-ply. It will use individual motors of General Electric Manufacture on the spinning and twister frames, and have as little overhead shafting as is possible. The building is to be of mill construction with steel sash, one story high. A central station equipment will be installed for the purpose of washing and purifying the air. This contract has been let to Stuart W. Cramer of Charlotte, N. C., and the building contract to the Gallavan Building Company, of Greenville, S. C.

Last month we commented on the fact that several mills had taken over the group insurance plan as a protection to their operatives. The Riverside Manufacturing Co. and the Toxaway Mills at Anderson, S. C., have now adopted the same plan, and approximately 800 employees on the payrolls of these mills are now protected by a life insurance policy.

Another plant that has decided to utilize the group insurance proposition in its mills for the benefit of its

employees is the Exposition Cotton Mills of Atlanta, Ga.

The old plant of the Georgia Manufacturing Company at Gainesville, Ga., has been purchased by Professor W. N. Randle, the textile director at the Georgia School of Technology. Mr. Randle is adding some new machinery to this mill, and it is understood will operate it in the manufacture of yarns.

The Inman (S. C.) Cotton Mills have just completed fourteen houses for their operatives, and are building ten more of a similar character.

The Cement Products Company of Wilmington, N. C., manufacturers of the well known "Sanisep" system of sewage disposal, have recently installed their system at the Enfield Hosiery Mills, Enfield, N. C.; Elizabeth City Cotton Mills, Elizabeth City, N. C.; The Dillon (S. C.) Mills; the new village of the Bibb Mfg. Co., at Porterdale, Ga.; and at the mining village of the United States Coal and Coke Co., at Gary, West Va.

The Trion Company, Trion, Ga., are partially electrifying their No. 2 Mill. About 250 horsepower is now being installed, the motors being furnished by the General Electric Co., and the wiring being done by Huntington & Guerry of Greenville, S. C.

It is reported that H. H. Luedecke has tentative plans for establishing a cotton yarn mill at Pittsburgh, Tex.

It is reported that the Highland Cotton Mills at High Point, N. C., will add 4,000 spindles to their plant and will also probably build a new mill of 12,000 spindles.

The Pickett Cotton Mills of High Point it is said are also contemplating an addition of 10,000 spindles.

It is rumored that plans are on foot to build two additional cotton mills at Gastonia, N. C.

Early in the month the control of the Franklin Mills at Greer, N. C., was sold to E. H. Shanklin of Greer and W. E. Mason of Greenville. These gentlemen will assume active management of the mill.

It has been announced that Robert Lassiter and associates of Charlotte, N. C., have purchased the controlling interest in the Victory Mills at Fayetteville, N. C., and will operate these mills.

The sundry civil appropriation bill, as reported to the house, carries an appropriation of $445,000 for the erection and equipment of a textile plant in connection with the federal penitentiary at Atlanta. The items were inserted through the efforts of William Schley Howard, and probably will be accepted in both houses. It is the purpose of the department of justice to employ convicts in the textile plant in the manufacture of such cotton goods as may be required by the government. It now develops that the erection of the textile plant is the first step in the program of the department of justice towards another radical departure in connection with the Atlanta penitentiary. When the textile plant is completed congress will be asked to provide funds with which to acquire several hundred acres of land adjacent to the penitentiary, and this land will be used for the cultivation of the cotton for the operation of the looms. It is proposed to make it a model cotton farm.

The Addison Mills, recently organized to take over the Beaver Dam Mills of the Hampden Cotton Mills Co. group at Edgefield, S. C., controlled by Lockwood, Greene & Co., of Boston, will be improved and probably new machinery added.

A company will soon be organized at Olin, N. C., by J. T. Jennings, with a capital of $50,000, to build a 2000 spindle yarn mill.

The action of the officers of the Roanoke Mills Co., at Roanoke Rapids, N. C., in authorizing the erection of an additional mill, to be known as Roanoke Mill, No. 2, was confirmed at a meeting of the stockholders on Feb. 9. The land has been purchased for this extension, including provision for the erection of the mill buildings and a number of tenements for the mill employes. This mill will be equipped with 23,184 spindles for the manufacture of carded cotton yarns from 8's to 30's, and later a weave shed will be erected for 700 looms for the manufacture of fine colored cotton goods. Building operations will be started about April 1.

Contracts have just been closed with Holbrook & Bradshaw, contractors and builders, for the erection of 40 new dwelling houses in Albermarle, N. C. These buildings are to be erected by the Wiscassett Mills Co., the Efird Manufacturing Company, and the Lillian Knitting Mills Company. It is rumored that another contract will be let for the erection of one of the biggest cotton mills yet constructed in Albemarle in the near future.

New England Mill Situation.

New England mills are as fully employed as restricted labor supplies and congested transportation conditions will permit. Coal shortage has been acute and has affected the mills in costs and in actual running, costs being twice what they were a year ago and some mills being compelled to stop some departments temporarily, to borrow coal from neighbors, and to conserve supplies wherever possible. Some mills that have contracts expiring have renewed them with coal companies at prices twice higher than a year ago, one instance being cited where a contract expiring in March at $4.15, has been renewed at $8.25 a ton. Several of the coal handlers have not filled their old contracts and this has led to a great part of the confusion, but it is also the fact that railroad and boat transportation has been impeded and disarranged greatly.

Owing to the unwillingness of railroads to accept less than carload lots of freight it has been difficult to distribute merchandise sent in less than carload lots and this has held up the delivery of supplies. The urgency of the demand for coal and food has also been a factor in delaying the delivery of cloth and cotton. The margin between New York contract cotton and the actual cost of cotton to the mills in New England has been wider than for a great many years, in some cases running as high as 3 cents a pound—300 points on—and this has made trading difficult.

While the labor situation as a whole has not been affected by community strikes, there has been a succession of demands made by small groups in both bleaching and manufacturing centers. The textile operative has been in command of the labor market because of the scarcity of labor in other directions, and while the mills have been helped in part by the necessity of working during the cold weather, the scarcity of competent employees has been great enough to force mills to accept what they could get.

At this time all things point to a further scarcity among mill operatives. Coupled with the rising costs of

mill supplies of all kinds, it will make the cost of production high, and possibly higher than it now is. This is one of the strong underlying causes of the general steadiness of cloth prices since the middle of December when the demand began to fall off. Cloths have not accumulated at the mill centers in winter months and there has not been the usual volume of spot offerings from manufacturers or their selling agents. Lacking this kind of pressure, the trading between second hands in central markets has permitted a readjustment of stocks among converters, jobbers, and those who bought for speculation, until the point has been reached where the actual primary stocks have been found to be subnormal.

The print cloth markets, which showed the sharpest decline following the beginning of dullness in December, have now recovered nearly half the total loss in prices and goods at Fall River have not accumulated in excess of half a week's output. At the present time the mills are contracted ahead through March for more than half their output. The mills at New Bedford still have fair sized orders ahead, in most instances to an extent that insures full running for three months. The demand for fine goods has been generally less than the call for other merchandise. The printers are running in full but have not been booking large forward orders on staples. One reason for this is that the period of protection on purchases expires March 1, when a new six months period begins and when new fall prices will probably be named.

Ginghams have been in good demand. The mills have sold as many dark styles as they care to make at present prices, which are higher than ever, ½ cent a yard higher than the high spot prices of three months ago for dress ginghams, and ½ cent higher on staples. Both Amoskeag and Lancaster staples are now quoted at 9½ cents a yard.

Wide sheetings, pillow tubings, and brown sheetings have held generally steadier than print cloths. Branded bleached cottons have remained unchanged in price except in the case of Berkeley, Lonsdales and Hopes, which were reduced on the 16th inst. ¼ cent and ½ cent a yard, and restored on the 19th inst., when small accumulations were sold. There was some giving way in the prices of unbranded bleached cottons of print cloth yarn construction, these goods showing more and more a tendency to follow the fluctuations in gray cloths. The finer grades of bleached goods, made of combed yarns, especially india linons, batistes, fine nainsooks, etc., have held very steady.

The large napped goods mills are all comfortably supplied with business for the summer. The cotton blanket mills are oversold and will have to work to the fullest capacity to meet the requirements already booked for delivery this side of October. All fancy napped cottons, both heavy and light, have been sold in a full way. Nearly all the narrow fabric mills are busy on contracts and all are making money. Those of them engaged on specialties in tapes, braids, and fancy notions, are being pressed hard for additional deliveries. Towel mills continue well supplied with business. Any mills that can make heavy drills in wide or narrow widths, have all the orders they can handle and mills that make lining cloths of fine quality are doing a better business than has come to them in years. Considerable of their prosperity can be traced to the ability of finishers in this country to handle finer venetians and twills to the satisfaction of those who formerly bought imported fabrics.

A number of special cloths are being made by the mills in this section. The Amoskeag Manufacturing Company have brought out a twilled yarn dyed fabric in sport stripes and other designs, heavier than ginghams and finer than the standard romper cloth made by this corporation. It sells for 15 cents a yard in 32 inch widths and is a very sightly dress fabric.

This company is also producing a cotton broadcloth which has not yet been shown freely. It has a twilled and napped face, the cloth being about as weighty as the teazle down, the best of the napped goods made by this concern. The finish is very unusual on a cotton fabric and is not likely to be imitated very successfully for a long time as the napping and fulling are done by special processes. The cloth is to be offered in all shades and is a distinct novelty in cotton goods output. The Lancaster and Parkhill mills have brought out some special fall dress cottons, heavier than ginghams but lighter than the standard cheviots. They have sold up to capacity of the looms for the coming season. The designs are in worsted suiting effects and the finish is about as close to wool draping as anything yet produced in cotton fabrics.

Some of the fine goods New Bedford mills have brought out samples of dress fabrics in all cotton that are attracting attention because of the possibilities they offer in supplying the demand created by the dearth of cheap wool and worsted fabrics for women's wear. Some are twilled, others corded, and waffled. They differ from many of the old lines of cotton dress goods made for years in Philadelphia mills, in that they are produced in large part from combed yarns and have superior wearing qualities and a most attractive finish, piece dyed, or in fancy woven effects. Thus far the output has been of comparatively limited volume, yet the opportunities to come from a growing shortage of wool make the possibilities of the cloths seem attractive to selling agents and converters.

The financial returns from the mills, shown at recent stockholders' meetings emphasize the wonderful prosperity of last year. The margin for profit has since been declining. Some of the returns show that mills earned all the way from 20 to 45 per cent, and some even higher, after having charged off for depreciation, and for repairs and additions usually included as additions to plant. For the first quarter of this fiscal year, the Fall River mills paid $761,975 in dividends on a capitalization of $30,535,000, an average of 2.515 per cent.

New England mill managers are decidedly inclined toward conservatism in the matter of extensions and new construction. The large earnings have been devoted more liberally than ever before to the reduction of debts or to the increase of surplus accounts. Dividends have been liberal in many instances, yet hardly in keeping with the large earnings. Stockholders are making no objections as the general feeling is that conservation of assets at this time will lessen any shock that may come, and assist materially in meeting the close competition that is anticipated if war ever ends. The war spirit has grown very rapidly since shipping conditions began to show the possibility of contracted export trade and the favoring of English traders through government control of facilities. Much less com-

plaint is heard about cotton prices despite the premium existing in consequence of transportation conditions, and the firmness shown by spot holders in southern markets.

Generally speaking the finishing and bleaching plants have a third less forward business booked than they had a year ago at this time. Yet all of them are busy as limited labor supplies will permit and when the uncertainty about international matters passes, it is believed that converters will show more courage in ordering ahead. Costs have gone up so much in bleacheries on account of coal and other supplies that further advances are looked for in the charges for job bleaching.

Machine shops are very busy. The only limit to orders is capacity to fill them. One report current here is that the Draper Corporation alone has 24,000 automatic looms on order and could book more orders if there were any reasonable prospect of assigning definite delivery dates. The demand for carding and spinning machinery continues full. Wherever machinists can work overtime they are doing so. Domestic orders in sight are so numerous that foreign business is not sought, although it is being tendered persistently.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

An important conference has been held under the auspices of the British Cotton-Growing Association. It was convened for the purpose of discussing the future of the cotton supply, and was attended by representatives of the Master Cotton Spinners' Federation, the Cotton Spinners' and Manufacturers' Association, the trade unions of the operatives and, of course, representatives of the Cotton-Growing Association itself. The chairman of the last-named body, J. Arthur Hutton, explained that the Cotton-Growing Association was founded to discover whether the cotton needed by Britain could be grown within the British Empire, and it now claimed that it had proved that it could, both as regards quantity and quality. The question was now one of time, capital and management. Mr. Hutton said the association was now practically at the end of its resources and could not undertake any new enterprises whatever. Arrangements had been made with their bankers for overdrafts to the amount of £500,000, but the bankers had given them to understand that the amount of liquid capital held by the association was not such as would justify similar assistance in the future. Mr. Hutton told the meeting that the association's capital was half a million, of which £170,000 had been spent in experimental work and £180,000 was locked up in plant, machinery, and investments in cotton companies, leaving only £150,000 as liquid assets. As regards the future, there seemed to be three alternatives: (1) that a government department should be formed to take over the work of the association; (2) that the association should be reconstructed as a public trust with government assistance and under government control; (3) that the work should be left to ordinary commercial enterprise.

The conference was informed that the cotton committee of the Master Cotton Spinners' Federation had recently passed three resolutions, the substance of which was as follows:

(1) That it has been demonstrated by the B. C. G. A. that cotton can be grown within the Empire.

(2) That the Federation agrees to support the association in urging upon the Government the necessity for giving facilities for cotton growing, and will be pleased to join in a deputation for that purpose.

(3) That it is willing to cooperate with the association and the Government in developing the cotton-growing industry in the British Empire.

The speaker for the Cotton Spinners' and Manufacturers' Association said he was sure that body would be glad to follow the lead of the Master Spinners' Federation, and the operatives' representatives promised the support of the trade unions in any effort to develop British cotton growing. The following resolutions were then unanimously adopted:

(1) That the present situation as to the supply of cotton is most serious, and requires the immediate attention of his Majesty's Government.

(2) That it is essential for the future prosperity of this country, and also for the welfare of the colonies, that cotton-growing should be developed as rapidly as possible in all suitable parts of the Empire.

(3) That the authorized irrigation works for the development of the Gezira plain be pushed on with the least possible delay.

(4) That immediate steps should be taken both to improve the quality and increase the quantity of Indian cotton.

(5) That a departmental or other committee be appointed to consider the best method of continuing and developing the work inaugurated by the B. C. G. A. and that, pending a decision on this question, the Government should render such financial and other assistance to the association as will enable them to carry on their work to the fullest possible extent.

Subsequent to the conference, the Prime Minister was approached and asked to receive a deputation, and at the last meeting of the council of the Cotton-Growing Association, it was reported that a letter had been received from the Prime Minister's private secretary acknowledging the receipt of the association's letter and promising that the matter would receive attention. The Manchester Chamber of Commerce has also taken up the question of the cotton supply and is urging upon the Government the necessity of cultivating cotton within the British Empire and the whole of the Chamber of Commerce in the country are to be approached and asked to support the policy of the British Cotton-Growing Association. As a means of encouraging firms to contribute funds for cotton-growing. Sir Charles Macara has put forward the proposal that the amount of any funds subscribed to such an object should be deducted from any portion of profits liable to the Excess Profits Tax.

The annual report of the Oldham Master Cotton Spinners' Association states that the outstanding feature of the trade during 1916 was the way in which it was able to maintain its position in the face of difficulties which, before the war, would have been said to be insuperable. The trade had played a part of the utmost importance in maintaining the financial stability of the country. Bad spinning complaints, says the report, have been very numerous, but never less justifiable. The agreement made with the operative spinners' union for the employment of women and girls on mules, has not been an unqualified success. It has certainly enabled more mules to be kept running than

would have otherwise been the case, but the conditions under which the female workers have been employed have been more or less exploited by the men. A considerable number of women and girls have left the mills to go on munition work and when called upon for that purpose have often left their employment without giving notice. The protests of the association have made it clear that no call would justify employees dispensing with notice. With reference to recruiting for the fighting forces, the report states that the mills cannot be carried on with inexperienced substitutes in charge, and that the time has arrived when every mill should be allowed to retain as a minimum the man in charge of the practical side and the man in charge of the commercial side.

One paragraph in the report is devoted to the question of the increasing number of mill fires. For more than a year past the number of fires has been much above the average and of recent months there has been quite an epidemic of outbreaks. It is stated in the report that, during the year, additional evidence has been accumulated of the practice of smoking in mills and that it is more extensive than it was thought to be. The comment continues: "Another factor which has contributed to the increasing number of fires is the great shortage of operatives. Machinery is both insufficiently and inefficiently staffed, so that cleaning and oiling are badly neglected. Last year all fire insurance offices experienced a considerable loss on cotton mill risks. This result has been verified by the experience of the Federation Cotton Trade Fire Insurance, formed for the particular object of testing cotton-mill risks. The result has been a notification that tariff offices will increase all existing rates by 50 per cent." As regards smoking, the report expresses the opinion that the use of matches inside a mill is almost as serious in its possibilities as in a colliery, and should be severely punished. The operative spinners' union has undertaken to issue a warning to its members on the subject.

The Yarn Market.

The opening of the month on the yarn market was slow, weaving yarns were at a standstill, and confidence in the stability of prices lacking. No one could foretell what the outcome of the situation would be, and the submarine situation tended to intensify the dullness. Many brokers predicted 10 cent cotton, and while this did not materialize, the lack of confidence in general conditions was very noticeable. There were few inquiries for combed yarns during this period, and while there were some inquiries for carded yarn on cones, buying was light. What sales were made were practically all for nearby deliveries.

As the month wore on there was more inquiry and the market reacted somewhat, although many predictions of lower prices were heard. Many spinners are sold up as far ahead as June and July, which tended to strengthen the yarn end of the market. Carded yarns on cones continued quiet, and sales were confined to small quantities at a variety of prices. There was some improvement in the weaving yarn inquiries, but not many sales made, as the manufacturers and buyers could not agree upon the price situation.

Toward the close of the month the market materially improved from an inquiry standpoint, although sales continued to fall short of inquiries. Some Eastern spinners who were looking for orders quoted much lower prices than Southern spinners. There was reported to be a surplus of combed mercerized yarn on the market which no one seemed to want at any price. This had a depressing effect on all standard combed yarns. Special twists that were not in general use by knitters and weavers were the only ones not affected.

The carded yarn situation at the last of the month showed a wide variation in prices with a slight tendency downward. Also, the inquiries for carded weaving yarns were almost wholly for spot or prompt deliveries. There were no sales in large quantities of carded weaving yarns reported during this period, although local weavers around the Philadelphia market were making more inquiries for prompt shipment than for some time past. Prices varied widely on the standard numbers of weaving yarn, as, for instance, 20's 2-ply warps sold for 30 to 32½ cents; 20's 2-ply skeins sold for 30 to 32 cents; and 20's singles warp sold for 31½ to 34 cents.

There seems to be considerable conflicting opinion on the probable course of prices during the next 30 to 60 days. Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	27½@28	10s	28 @28½
12s	28½@29	14s	29 @29½
16s	30 @30½	20s	31½@32
24s	35 @35½	26s	35½@36
30s	37½@38		

Southern Single Warps.

8s	28 @28½	10s	28½@29
12s	29 @29½	14s	29 @30
16s	29½@30½	20s	32 @32½
26s	35½@36	30s	38 @38½
40s	52½@53½		

Carpet and Upholstery Yarns in Skeins.

8-4 slack	28 @28½	9-4 slack	29 29½
8-3-4 hard twist	26 @26½		

Southern Two-Ply Skeins.

8s	29 @29½	10s	29½@30
12s	30 @30½	14s	29½@30
16s	30 @31	20s	31½
24s	35½@36	26s	36 @36½
30s	37 @37½	40s	53 @54
50s	65 @66	60s	74 @75

Southern Two-Ply Warps.

8s	29 @29½	10s	30 @30½
12s	30½@31	14s	30½@31
16s	31 @31½	20s	31 @31½
24s	36 @36½	30s	36½@37½
40s	54 @55	50s	66½@67½

Northern Two-Ply Carded Peeler Skeins.

20s	35 @35½	24s	36 @36½
26s	36½@37	30s	38½@39
36s	44 @45	50s	67 @68

Two-Ply Combed Peeler Skeins.

20s	48 @49	24s	52 @53
30s	56 @57	40s	68 @70
50s	74 @75	60s	84 @85
70s	92 @95	80s	$1.05@$1.10

Southern Frame Spun Yarn on Cones.

8s	28½@29	10s	29 @30
12s	29½@30½	14s	30 @31
16s	30½@31½	18s	31 @32
20s	32 @32½	22s	33½@34
24s	35 @36	26s	36½@37½
30s	37½@38	40s	53 @54
24s tying in	33½@34	30s tying in	35 @36

Northern Mule Spun Carded Peeler Yarn on Cones.

10s	32 @32½	12s	32½@33
14s	33 @33½	16s	33½@34
20s	35 @35½	24s	37 @37½
26s	38 @38½	30s	42 @42½
40s	55 @56		

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	45½@46½	12s	46½@47
14s	47 @47½	16s	47½@48
20s	49 @49½	24s	50½@51
26s	51½@52½	30s	56½@57½
36s	61½@62½	40s	67½@68½

An exceptionally useful wall calendar is that sent out by Joseph A. Vogel Co., Wilmington, Del. Each page contains a large-figured calendar for the past, current and coming month and is headed by an advertisement of the company's patented frost-proof closet.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, February 21st, 1917.

The market is gradually recovering from the demoralization occasioned by the sensational over-night decline of about 5 cents per pound, or about $25 per bale, due to Germany resolving to conduct a campaign of unrestricted submarine warfare contrary to international law, thereby making war with the United States possible, if not probable, which became evident subsequently by Washington severing diplomatic relations with Berlin.

After the shock had its full effect it was realized that if the worst was yet to come, and that war could hardly be averted, the government would be in the market for unlimited orders for cotton material for army and navy purposes, thereby increasing the demand for cloth and causing a larger consumption of the raw material.

It was also argued that if America is compelled to enter the war against Germany in order to maintain her rights on the seas, the use of the United States navy would be a big help in keeping open to commerce the ocean lanes to Europe, when, it is thought, exports may increase.

Another feature in connection with the possibility of this country becoming involved in war, is that such a development would call for the mobilizing of a very large army for home defense and for the making of munitions of war, which would cause a scarcity of labor for the cultivating of the next cotton crop.

Fortunately, if hostilities cannot be averted, the South is in a position to keep its cotton acreage down and plant more of food crops owing to the high prices prevailing for grain and provisions.

One of the most astounding features in connection with recent sensational occurrences, notably the record big overnight decline recorded February 1st, is the independence displayed by Southern spot holders during the most trying period in the history of the trade, which bears silent testimony to the financial strength of the South.

As a matter of fact there has been no selling of spot cotton of consequence, except hedge cotton, since the decline occurred, and although the contract market has recovered about $14 per bale from the low level touched, interior and local spot holders have not been tempted to sell, having confidence in higher prices eventually.

They are encouraged in their holding movement by the big consumption of cotton by American mills, by the small stocks abroad and the knowledge that Europe so far has taken only about one-half of their season's requirements, making it plain that spinners must of necessity continue to buy largely of American cotton for future requirements.

During the month of January American mills consumed 679,000 bales compared with last year's previous record for January of 623,000 bales, since August 1st, 3,779,000 against 3,521,000 for the corresponding period last season, or 258,000 bales more than to close of January one year ago.

In view of the fact that American mills consumed 7,279,000 bales last season, the increase of 258,000 thus far this season indicates that the United States will consume nearly 8,000,000 bales of cotton this season, as the number of active spindles at the close of January was the largest on record—33,009,000 compared with 31,847,000 on the corresponding date last year.

Today the world's visible supply of all kinds is only 5,120,000, last year 5,839,000, year before last 7,361,000, of which 3,996,000 is American against 4,280,000 last year and 5,904,000 year before last, other kinds figuring 1,124,000, last year 1,558,000 and 1,456,000 year before last.

Owing to almost incessant rains and cold weather east of the Mississippi River since opening of the year, little progress is reported in preparing for the new crop in the eastern half of the belt. In the western half of the belt farm work is fairly well advanced, but a general, heavy rain is needed, especially in Texas where there is a big deficiency of moisture in the soil.

System of Numbering Colored Yarns.

Ralph M. Odell, in his latest report on Cotton Goods in British India, calls attention to their system of numbering colored yarns. The principal numbers are 40's, 50's, 54's, and 60's, but these refer to the number of yarn in the grey and not after dyeing. A peculiar and rather confusing system of numbering yarns is in vogue. Number 40 full weight, which is perhaps the largest item in the trade, means actually No. 40 yarn; that is, 1 pound in the grey contains 33,600 (840 x 40) yards. The terms "44/40's," and "60/40's" mean 44's, 50's, 60's yarn made up as 40's, the hanks per pound being reduced to compensate for the extra cost of the higher number. A 5-pound bundle of 40's full weight contains 200 hanks (5 x 40), or 168,000 yards, of yarn. A nominal 5-pound bundle of 44/40's, or 44's put up as 40's contains the same number of hanks and yards as 40's full weight, instead of the 220 hanks and 184,000 (5 x 44 x 480) yards which it would contain if it were 44's full weight. This means that the bundle has one-eleventh less yards than it would have if the yarn were 44's full weight, which would make the actual weight of the bundle, without taking into account the loss or gain in weight after dyeing, 4 pounds 8.73 ounces. Similarly, a 5-pound bundle of 50/40's would contain one-fifth less than a bundle of 50's full weight, and the actual weight would be 4 pounds. Seven twenty-sevenths would have to be deducted for 50/40's and one-third for 60/40's. The quotation for 50/40's is always lower than for 50's full weight, but this difference is more apparent than real. For example, if one pound, or 42,000 yards, of 50's yarn is worth 40 cents, the price of 50/40's yarn, or 50's put up as 40's so that there are 40 hanks containing 33,600 yards instead of 50 hanks or 42,000 yards would be one-fifth less, or 32 cents; but this is the price for 40 hanks and not per pound, as frequently stated in market quotations. A bundle containing 200 hanks of 50/40's therefore would cost $1.60, but actually the bundle weighs only 4 pounds, so that the price per pound figures 40 cents, as in the case of 50's full weight. In practice, when these so-called "reduced counts" are sold by the pound, the pound does not refer to the weight but means 40 hanks when the yarn is put up as 40's, 50 hanks when the yarn is put up as 50's, etc.

COTTON MANUFACTURING.

Grinding the Revolving Flat Card.

BY GEORGE S. BROWN.

Cards to be kept in the best of condition and to produce the best work, should be ground carefully and frequently. Grinding of cards can be neglected for a long time but there will be a day of reckoning, and that day of reckoning will be a sad one. It means a lot of hard, discouraging work to attempt to restore neglected cards to even a passable condition. Don't let the cards run down. If a carder knows enough to keep his cards in a clean, well oiled and systematically ground shape—well, he won't have to know much more in order to make a success of his room.

To grind the cylinder and doffer, proceed as follows:

Throw off the feed, and back out the lap from the feed roll. Place the lap on the rack of a nearby card to get it out of the way. Stop the calender rolls, and have the card stripper strip out both cylinder and doffer of all short fibre and dirt. Allow the card to run till the flats are stripped clean. Remove the flat stripping roll. Throw off the belts that drive the flats, licker, and doffer comb. Throw out the doffer gear and remove the bolt from the starting lever, so that no one can accidentally throw in the gears while the doffer is speeded up. Throw off the main belt and tie it up out of the way, if a separate grinder belt is used.

With a long thin hook, remove any side waste that may have accumulated between the cylinder ends and the side frame. Roll out all waste underneath the card and in fact, remove all waste and loose fly about card before putting on the grinders, because occasionally a spark is struck and the danger of fire is great if lint and loose waste are present.

Open up the front plate and remove the draft stick from between the cylinder and doffer. Try a No. 5 gage between cylinder and doffer to make sure they clear each other. Put on an open belt from the cylinder pulley (opposite end of the shaft from the main driving pulley) to the pulley on the end of the doffer. Put on the main grinding belt from the main shaft. If the card, when producing, is driven with a crossed belt, use an open belt when grinding, as the cylinder must now revolve backward while the doffer travels in its regular direction only at a greatly increased surface speed.

Start the cylinder backwards, after making sure that everything is clear, and brush out the wire on both cylinder and doffer with a card brush about two feet long by three inches wide. Stand in front of the doffer and press the bristles against the card wire, dusting the doffer first, as much of it from here is thrown against the cylinder. Reach over the doffer and brush out the cylinder. This is a dirty job and the grinder should put on a respirator or hold a piece of cotton between his lips of sufficient size to protect his nostrils.

Belt up the flats—reverse belt from the usual—to allow the removal of dust driven into them while dusting out the cylinder and doffer. Then stop the card.

A set of grinders consists of a dead roll and two traverse grinders. These should be kept on a truck so that they may be easily wheeled about from card to card. Place both traverse grinders in their correct stands, one on the cylinder and the other on the doffer. Slide the rolls up close to the edge of the wire on one side of the cylinder and doffer and see that a No. 5 gage will pass easily between them and the wire. Slide the rolls over to the other edge of the wire and try the gage there. Now when the card is started, the grinder is sure to be out of contact and won't be pressing hard on the wire and throwing sparks. Put on the grinder bands, oil the bearings of the card, and start it up.

First set up the grinder on the cylinder at one end a trifle when roll is at that end. As roll nears other end, set that end up at bit. Adjust alternately one end and the other until the grinder touches lightly and evenly across the entire width of card with a slight "sizz." The roll may

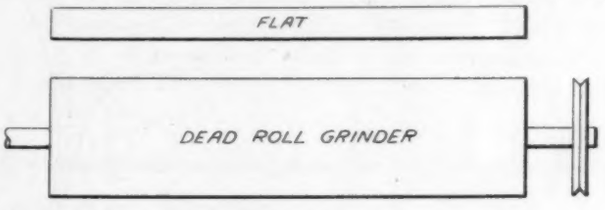


FIG 3
CORRECT FLAT GRINDING
ROLL AND FLAT PARALLEL

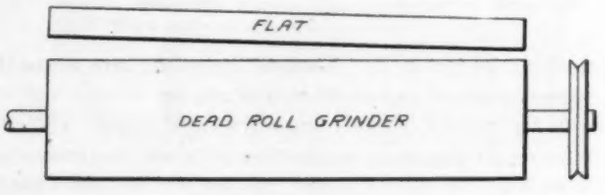


FIG. 4
INCORRECT FLAT GRINDING
ROLL AND FLAT NOT PARALLEL

now be left to do its work, but a better method is to now set this roll in a trifle harder than it should be, and then set it "away" from the cylinder until it has the correct touch. By setting the grinder away from the wire, you get rid of the backlash in the adjusting screws and take no chance of having the grinder move in hard against the wire and damage it when nobody happens to be present. This same rule holds good on all card settings. Set *"away from,"* not *"towards."* For instance, if setting the doffer to the cylinder at No. 7, set to No. 5 loose and then draw the doffer off to No. 7. If the reader has ever had a doffer move in on a cylinder and face the wire, he will appreciate this idea.

Set the grinder on the doffer the same as on the cylinder, only have the grinder touch a little lighter than it does on the cylinder. Occasionally brush off the card when the grinders are in operation, so as not to have lint collect.

The length of time that the wheels should be kept on the card, depends on the condition of the wire and whether light or heavy grinding is the rule. If time can be permitted, ten hours of light grinding is much to be preferred to five hours of heavy grinding with the chances of heating and drawing the temper of the wire, and also "hooking" or "barbing" it.

A card that has been sufficiently ground should not show spots having a glistening surface, as this generally means dull wire. By resting the fingers on the wire and lightly drawing the thumb against the points of the wire, the amount of resistance felt will serve as a good guide in revealing the sharpness of the wire. The thumb should stick or cling to the points.

Sometimes it happens that accidentally or otherwise, the wire becomes hooked when the card is ground. Too heavy grinding, too long grinding, or a stuck grinder traverse causing the wheel to grind in but one strip, will put a hook on card wire. A very light hook can sometimes be removed with the burnishing brush, but in severe cases, a more strenuous remedy is required.

It is seldom that both cylinder and doffer get hooked at the same time. If only the cylinder is affected, the doffer

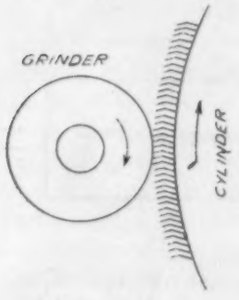


FIG 1
REGULAR GRINDING

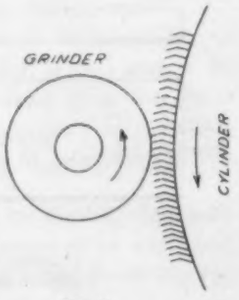


FIG 2
GRINDING TO REMOVE "BARB"

need not be run at all. Close all doors or plates where the wire is exposed except where the grinder is set. Put the cylinder grinder in place and start the cylinder. Cylinder must be driven in same direction as when producing, i.e., forward. Set the traverse grinder to run backwards, towards the point of the wire. Set it very lightly to the card wire, and see that all fly is cleaned from the card as this method of grinding will throw light sparks. The result of this application will be that the hook is removed but the card wire will also be faced, so as soon as the hook has disappeared, grind the cylinder again in the regular way, but don't grind hard or it may hook again. This remedy may sound severe to some carders, but works out very successfully and quickly.

Remember, when driving the cylinder as just described, never touch the wire with the fingers or allow the clothing to come in contact with it, while the cylinder is moving. A card operating in this manner is very dangerous and the grinder should receive specified permission from the overseer before applying this method, and while the card is in operation, someone should be on guard, especially if the work is being done on the doffer.

After the cylinder and doffer are ground, the following settings must be looked after: doffer to cylinder, doffer-comb to doffer, licker to cylinder, and feed plate to licker. Other settings may be examined if desired but these four are very necessary.

Grinding the flats is done while the card is producing. The dead roll is used for this and it is set by ear to grate quite harshly on the wire as the flats come into position. The fact that the dead roll is the full width of the flats, causes it to act on the wire the entire length of the flat simultaneously, and thus, while it should not press on the wire any harder than the narrow faced traverse grinders do on the doffer and cylinder, still, the sound produced is many times louder.

The principal points to watch out for, are to see that the same pressure is brought to bear equally across the entire length of the flat, that the flats as presented to the roll, are parallel to its axis (this assures that roll will begin to grind on the entire toe of flat at the same time, not one end first), and also see that the short traverse motion of the dead roll does not get stuck.

After grinding the flats, it is not necessary to set them to the cylinder. These are generally set periodically, going over the entire section at one time.

When starting up a card after it has been ground, be sure that all plates and guides with which the cotton comes in contact, are clean and polished. A bunch of thread waste with powdered black lead dusted into it, will polish off smooth parts very nicely.

See that every bearing is well oiled, and in the cylinder and licker boxes, pack yellow cup grease, and be sure to poke a hole through it so that oil can flow directly to the shaft. The grease is there merely to guard against a hot bearing if the oiler forgot to lubricate the spot. The bearing when not oiled, warms up and the grease melts and saves it from being ruined.

Before starting up, turn the cylinder by hand to make sure that no parts are rubbing. A card is a very delicate piece of mechanism and it should be *cared for carefully*. The man who goes at a card with a hammer or a pinchbar, should be gently (?) but firmly rebuked.

A new French dye company has been formed to combat foreign supremacy in the dyestuff industry after the war, which has the title of "Compagnie Nationale de Matieres Colorantes et de Produits Chimiques," with offices at 134 Boulevard Haussmann, Paris. Its capital is fixed at 40,000,000 francs ($7,720,000) in shares of 500 francs ($96.50) each, of which 60,000 shares are offered for public subscription. The other 20,000 shares have been taken up by the promoters, among whom are to be found the leading textile manufacturers, chemical producers, and the head of the firm the Blanchisserie de Thaon, which, prior to the war held a practical monopoly in the French finishing trade for textiles of wool and cotton.

The French Government has requested that the shares shall not be, as originally intended, bearer shares, but shall be strictly nominative, and not transferable without the permission of the Administrative Council. The proviso is made, however, that in the event transfer is refused the shares shall be bought back by the company at a price to be fixed annually at the general meeting of the shareholders.

Latin American Monetary Systems.

BY JOSEPH T. COSBY.*

BOLIVIA.

The monetary system of Bolivia is based on the gold standard. The Boliviano is the theoretical unit. It is divided into 100 centavos representing 0.63904 grammes of gold .91666 fine or say .58579 grammes of fine gold (B 12.50 to the £ Sterling.) Its par value in terms of U. S. currency is $0.3893, and the value therefore of $1.00 U. S. currency, expressed in terms of Bolivian currency, is Bs 2.5685.

The chief article of export of Bolivia is tin. Just how important a factor this item is in relation to the total export trade is demonstrated by the fact that of a total export movement in the year 1912 of $25,057,841 the sum of $23,432,668 corresponded to tin. The greater part of Bolivia's tin goes to Great Britain, and with the outbreak of the war this trade was practically suspended. Bolivia therefore has been severely affected as a result of the war.

The normal rate of exchange in Bolivia for 90-day draft on London fluctuates around 18½d per boliviano. This rate has declined since August 1st to as low as 14¾d per boliviano, with remittances scarce and difficult to procure even on this basis. The quotations in Bolivia for exchange on New York are more or less nominal, even under normal conditions, and vary from Bs 2.60 to Bs 2.80 per $1.00 U. S. currency.

*Manager Foreign Department, The National City Bank of New York.

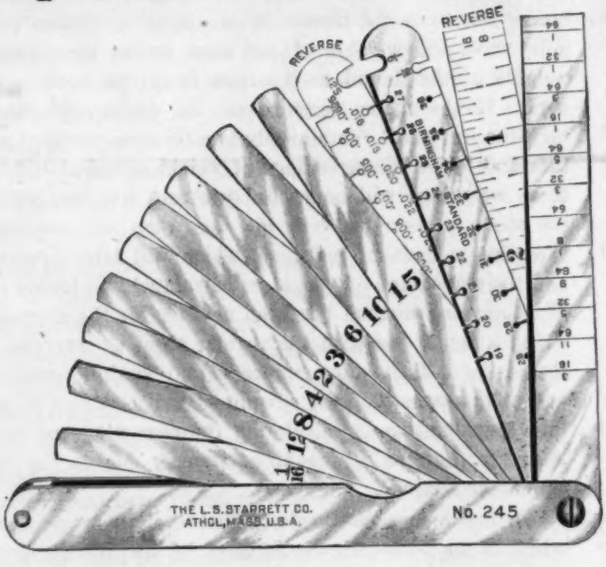
CHILE.

Chile is nominally on a gold basis, but the currency is inconvertible paper, and there is no limit to the fluctuations which may occur in the exchange quotations, as there is no fixed unit or value as a basis for rates. A theoretical unit exists in the Chilean gold peso, which represents 0.599103 grammes of gold .91666 fine, or say, 0.54918 grammes pure gold. Its par value in terms of U. S. currency is $.0365, and its equivalent in British currency is 18d. The law fixing this unit, however, is not in active operation, and the circulation is limited to Government notes, which are normally quoted at rates fluctuating between 9d and 11d per Chilean paper peso. At the present time the rates fluctuate in the neighborhood of 7½d, thus showing a depreciation in the Chilean paper currency of 25 per cent more or less.

The basis of exchange in Chile is the 90-day London bill, which is quoted in terms of pence per one paper peso; thus, when the rate of 90-day bills on London is quoted at 10d, it means that Chile receives 10d British currency for each paper peso.

Chile has been severely affected by the European war. Her chief article of export is nitrate, which finds its principal market in Great Britain and Germany. This market being cut off for the time being, the nitrate business, which is the heart of Chilean industrial and commercial life, has been paralyzed.

Special Cotton Mill Gauge Free—



for a few minutes of your time.

The taper gauge shows the thickness in 64ths to 1/16ths of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths of an inch.

The wire gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one 1/16, the other ⅛ on an inch, and on the other side shows the decimal equivalents expressed in thousandths. This gage has also 9 thickness or feeler gage leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, 008, 010, .012, .015 and 1/16th of an inch all folded within the case, which is 4¾ inches long, convenient to handle or to carry in the pocket.

Our Service Department desires the opinions of active mill men on the quality of the work shown in the advertising pages of this issue of COTTON.

We are, therefore, going to give this gauge for the best letter by a mill executive who gives the clearest and most definite reasons why, and in what maner, any certain advertisement is, in his opinion, the best.

Contestants must be mill executives, from overseers to presidents, connected with spinning, weaving, knitting, or finishing plants. The letter must be accompanied by the name, address and official position of the writer in order to be eligible, and must reach this office not later than the first of the month succeeding the date of issue.

The judges will be the Editor of COTTON and the Manager of the Service Department, whose decision will be final. The name of winning contestant will be announced in COTTON'S pages.

Address Contest Department of COTTON, Atlanta, Georgia.

THE WINNER OF THE CONTEST FOR FEBRUARY WAS SETH TAYLOR OF THE RIVERSIDE COTTON MILLS, DANVILLE, VA.

Dyeing, Bleaching and Finishing.

George Mallet MacNider,

the author of the article which follows, died at the Davis and Fisher Sanatorium at Atlanta on Tuesday afternoon, February 27th, of pneumonia, after an illness of but ten days.

Dr. MacNider was born in 1884 and graduated from the University of North Carolina with the Class of 1903. He then took a post graduate course at Cornell University and became assistant state chemist of the department of agriculture at Raleigh, N. C.

While in this position he became interested in research work and prepared several monographs on commercial starches. These were printed in the journal of Industrial and Engineering Chemistry for June, 1912; the journal of the Elisha Mitchell Scientific Society for December, 1912; and in COTTON in August, 1912, and February, 1913. These articles attracted widespread attention and in June, 1913, he was offered and accepted a position as chemist with the Corn Products Refining Co., of New York.

In March, 1914, he was sent to Greenville, S. C., as manager of the Southern office of the company and occupied this position until July, 1915, when he was made textile chemist for the company and looked after their interests throughout the whole textile field, although still retaining Greenville as his headquarters. This position he retained up to the time of his death.

The accompanying article was the last he prepared and was in the hands of the printer when he died. It represents his last effort to aid the textile industry through the medium of the profession he loved. It is of interest to note in this connection that in his final example as published, he refers to his experiments in temperature control, the latest field of research to which his investigative mind has been devoted. He had expected to prepare within the next few months a complete monograph upon his experiments in this interesting field.

His untimely death is a serious loss to the textile industry and is sincerely regretted by his multitude of personal friends.

The Determination of Weight and Breaking Strength of Warp Yarn Due to Sizing.

BY G. M. MAC NIDER.*

In determining the value of any particular process of sizing, or in determining the value of any particular kind of starch for a given purpose, the first point to be determined is the efficiency of the process or starch for the class of work to be done. The first and most important test to be applied is the weaving of the warps, but the weaving qualities of the warps depend very largely upon two factors; first the amount of weight added to the warp by the sizing and second the increase in the strength of the warp due to the sizing process. The amount of weight added is important as it shows whether the warp is properly sized for the kind of cloth into which it is to be woven, for example a warp for eighty square goods should be sized heavier than a warp for sixty-four sixty goods. Also the amount of weight added to the warp by sizing should be carefully determined and taken into consideration in calculating the numbers to spin for any particular construction of cloth. This factor varies a great deal among mills making the same construction of cloth and if the amount of weight added by sizing were given proper consideration a very large saving could be made in the cost of production. The increase in the strength of the warp due to the sizing process shows whether the warp is strong enough to withstand the strain of weaving and is the best indication of the efficiency of the sizing operation, for it frequently happens that sufficient weight is added without producing a properly sized warp, the fibers are not sufficiently cemented together and hence the thread breaks easily in the loom causing low production. As will be shown in the following paragraphs the amount of weight added to the warp and the strength given the warp by the sizing process can be accurately determined. There is a third factor which influences the weaving qualities of the warp, namely the pliability of the thread. So far there is no method of determining this and the only indication is the feel and the actual weaving qualities of the warp.

The usual method of determining the amount of weight added to the warp is to weigh the section beams before sizing, deducting the weight of the empty beams and then weigh the loom beams as they are taken off the slasher, deducting the weight of the empty beams. This procedure gives only an approximation of the amount of weight added, for the amount of moisture in the cotton is not taken into consideration. The weights of the section beams represent the thread in its normal condition in the mill, while the weights of the loom beams represent the weights of the thread as it comes from the drying cylinders. If the steam pressure on the drying cylinders is high the warp will contain only two to three per cent moisture and hence the percentage of weight as calculated from these weighings will be several per cent too low, while if the steam pressure is very low the warp will contain an excessive amount of moisture, which will later evaporate, and the percentage of weight as calculated will be too high. The following method has been devised for the purpose of sizing a single end with the regular sheet of warp so that the sizing will be done under actual working conditions and at the same time the amount of moisture can be taken into consideration in calculating the percentage of weight. Also the increase in breaking strength due to the sizing can be determined.

In order to separate from the sheet of warp the end which is to be tested, use is made of the Bitten yarn attachment. This attachment is fastened to the side of the frame at the front of the slasher. As will be seen from the cut Fig. 1, this attachment consists of a spindle driven by a band, the power being taken from either the fan shaft or the cone shaft, and carrying a small spool. The spool fits loosely on the spindle and is driven entirely by friction, hence the speed of the spool can be easily adjusted so that it will wind the yarn at the same speed as it is being delivered by the slasher and hence the tension on the thread to be tested is the same as that on the regular yarn being sized.

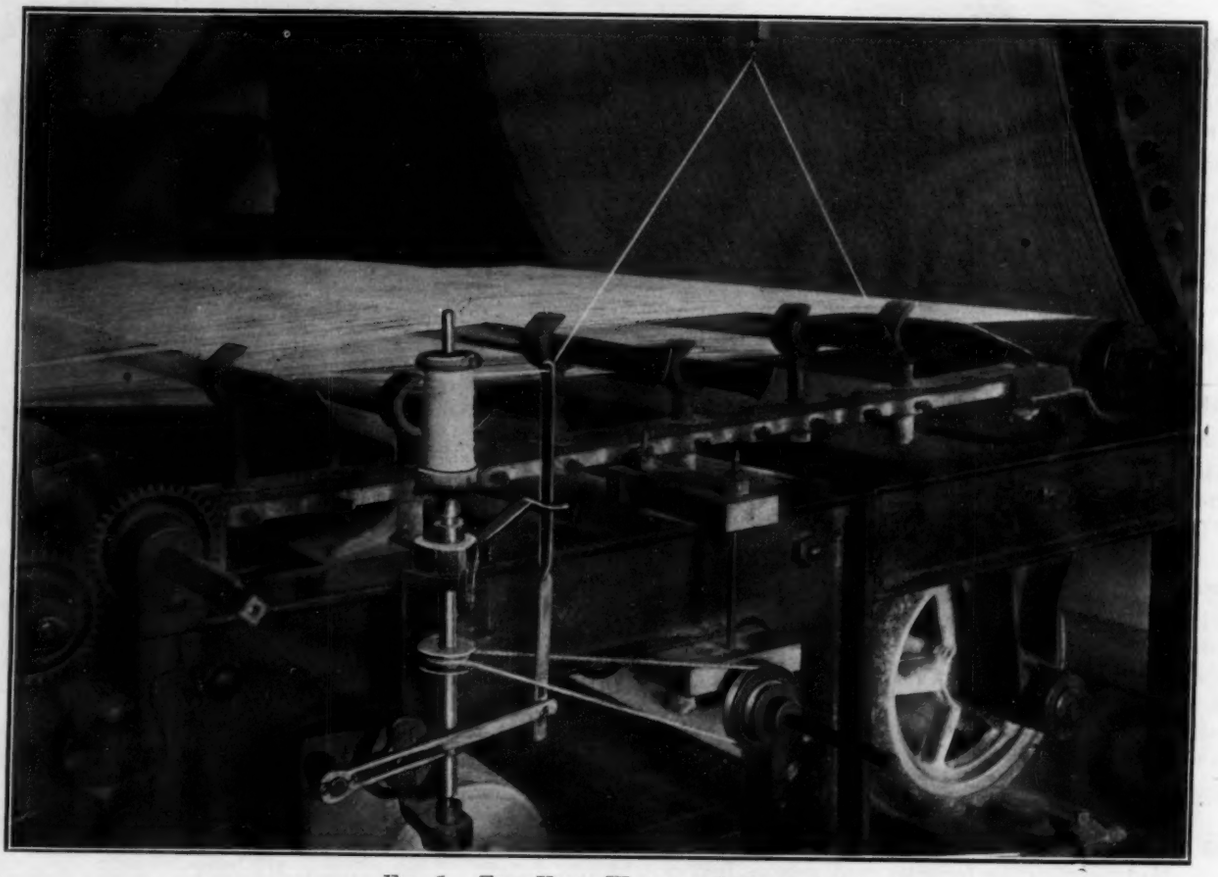


FIG. 1. THE YARN WINDING ATTACHMENT.

In order to prepare the warp for the determination of added weight the apparatus shown in Fig. 2 has been constructed. As will be seen from the cut, this consists of a frame to which the Bitten attachment is fastened. The power is furnished by a motor and is transmitted to the winding attachment through a set of pulleys in order to obtain the proper speed. At the opposite end from the winding attachment is a spindle for holding the spool of yarn which is used in the test.

The procedure for using these devices is as follows: a spool of the regular warp yarn being sized by the mill where the tests are to be made is taken for the weight determination. The spool is placed on the spindle and a portion of the yarn wound on the small spool by the winding attachment, the weight of the small spool being previously determined. The number of yards wound on may vary (enough should be put on to afford a good test), in practice it has been found advisable to put on a somewhat less number of yards than is put on the loom beam, this enables the yarn to be sized while one loom beam is being filled and the test yarn is not on the slasher when it is stopped for doffing. When the proper amount of yarn is on the spool a skein is reeled off for the moisture determination and the spool is then weighed so that the actual weight of the yarn to be sized is known. Any number of spools can be used for a test, it being only necessary to use a sufficient number to give an average. It has been found that four spools gives a good average. When the yarn has been prepared as described the spool is placed in a small frame or holder at the back of the slasher and the yarn passed through the size box and around the cylinders with the regular sheet of yarn and wound on another spool by the Bitten attachment, Fig. 1, on the front of the slasher. (It is best to fasten the thread to a leader so that all of the weighed yarn is sized at the regular speed of the slasher.) The sized yarn is next reeled off the spool and weighed and either a skein or the entire sample placed in the conditioning oven to determine the percentage of moisture. The most desirable procedure is to calculate the weight of both the soft yarn and the sized yarn to a 7.5 per cent cotton regain.

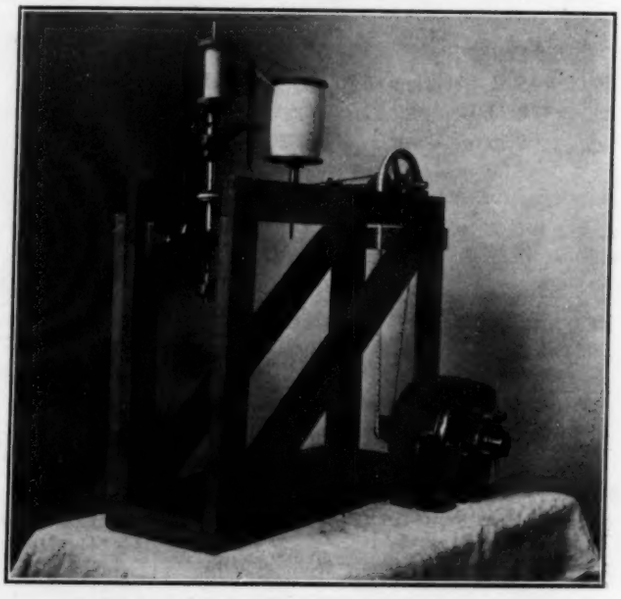


FIG. 2. WINDING FOR THE WEIGHT TEST.

When this is done the differenre between the weight of the sized yarn and the weight of the soft yarn gives the percentage increase in weight due to sizing.

For the determination of the breaking strength the procedure is as follows: A bobbin of the regular warp yarn being used by the mill where the tests are made is placed in the holder at the back of the slasher and sized similar to the yarn for the weight determination. Only half the yarn on the bobbin is sized. The sized yarn is now reeled off the spool and the breaking strength determined and the remaining soft yarn reeled off the bobbin and the breaking strength determined. This enables the breaking strength of the sized yarn to be compared with the breaking strength of the soft yarn from the same bobbin. A satisfactory average is obtained if three bobbins are used and five breaks both of sized and soft yarn made for each bobbin.

The following three examples will show the application of this method in practical mill work. One of the more important questions to be decided by the mill manager is the proper kind of starch to use for any particular class of work and what results should be obtained from the different starches. The first two examples give a comparison of the results obtained with regular pearl corn starch and modified or thin boiling starch on two classes of goods, while the third example shows how the sizing process can be improved by a proper handling of the starch.

Example No. 1. Comparison of pearl starch with modified or thin boiling starch for sizing 14's warp goods 40 inch—48x48—2.85. The formulas used were as follows:

Pearl Starch.

123 gallons water,
80 pounds pearl starch,
8 pounds compound.

Thin Boiling Starch.

123 gallons water,
123 pounds thin boiling starch,
18 pounds compound.

TABLE I.

WEIGHT TESTS.*

Pearl Starch.	Thin Boiling Starch.
5.51 per cent	11.11 per cent
5.34 per cent	8.54 per cent
5.05 per cent	11.32 per cent
6.50 per cent	11.11 per cent
Average 5.67 per cent	10.83 per cent

TABLE II.

BREAKING TESTS 14's WARP, SIZED WITH PEARL STARCH.

	SOFT YARN						SIZED YARN		
	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
	142.0	13.79	144.0	13.59	138.0	13.77	141.0	136.0	134.0
	139.5	14.75	135.5	13.76	126.5	13.61	146.5	140.0	136.0
	128.0	14.10	140.0	13.72	130.0	13.85	138.5	147.5	134.0
			134.0	13.79	136.5	13.72		145.5	132.0
					123.0	13.51		141.5	139.0
Av.	136.5	14.20	138.3	13.64	130.8	13.72	142.0	142.1	135.0

*All figures are calculated to 7.5 per cent regain.

Average break Sized Yarn....139.7 lbs.
Average break Soft Yarn....135.2 lbs.

Increase due to Sizing..... 4.5 lbs.

TABLE III.

BREAKING TESTS 14's WARP SIZED WITH THIN BOILING STARCH.

	SOFT YARN						SIZED YARN		
	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
	141.0	13.76	128.0	13.68	142.5	13.61	139.0	147.5	148.0
	132.0	14.29	130.0	13.99	137.0	13.66	148.5	144.0	159.0
	132.0	13.89	130.0	13.93	138.0	13.42	149.5	146.0	149.5
	134.5	13.93	130.0	13.99	137.0	14.08	145.0	143.5	145.0
	142.0	13.26	134.0	14.01	138.5	13.89	140.0	144.0	150.0
Av.	136.3	13.95	130.0	13.93	138.6	13.74	144.4	145.0	150.3

Average break Sized Yarn....146.5 lbs.
Average break Soft Yarn....134.9 lbs.

Increase due to Sizing..... 11.6 lbs.

Example No. 2. Comparison of pearl starch with thin boiling starch for sizing 30's warp goods 27 inch—56x72—9.00. The formulas used were:

Pearl Starch.

120 gallons water.
90 pounds pearl starch.
7 pounds compound.
3 pounds tallow.

Thin Boiling Starch.

120 gallons water.
120 pounds thin boiling starch.
8 pounds compound.
7 pounds tallow.

TABLE IV.

WEIGHT TESTS.*

Pearl Starch.	Thin Boiling Starch.
7.69 per cent	15.9 per cent
9.65 per cent	11.7 per cent
8.50 per cent	15.5 per cent
	13.6
Average 8.61 per cent	14.1 per cent

TABLE V.

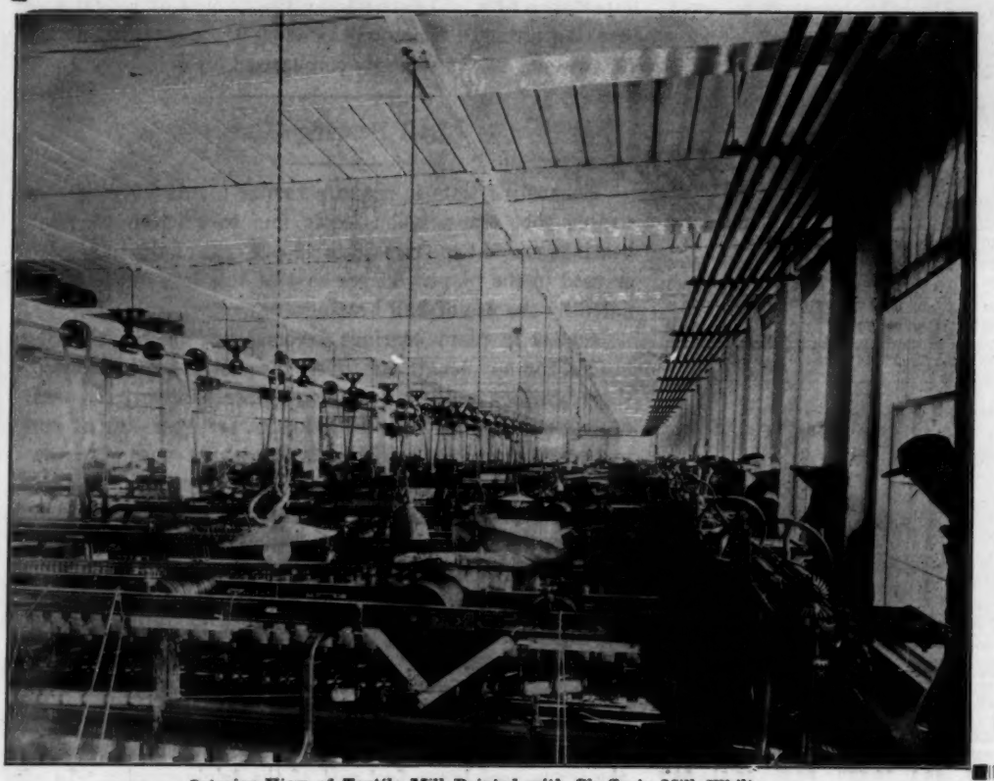
BREAKING TESTS 30's WARP SIZED WITH PEARL STARCH.

	SOFT YARN						SIZED YARN		
	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
	54.5	29.41	52.5	30.12	52.0	28.57	51.5	61.0	54.0
	55.0	28.90	52.5	28.99	51.5	29.15	53.0	58.0	56.0
	51.5	28.41	53.5	29.07	51.0	29.41	56.5	55.5	58.0
	55.0	28.49	55.5	28.25	50.5	28.90	59.5	56.5	55.0
	54.5	28.41	53.0	29.50	56.0	27.40	58.0	64.0	56.0
Av.	54.1	28.74	53.4	29.24	52.1	28.74	55.7	59.0	55.8

Average break Sized Yarn....56.8 lbs.
Average break Soft Yarn....53.2 lbs.

Increase due to Sizing..... 3.6 lbs.

Paint Your Factory Walls and Ceilings with



Interior View of Textile Mill Painted with Chaffee's Mill White

Chaffee's Sparkling Mill White

Added Light
Lowest Ultimate Cost
Permanent Finish

Endorsed by Users Everywhere

Prolongs the Daylight Hours—Reduces Bills for Artificial Light—Creates Sanitary Surroundings—Insures Increased Precision and Accuracy in the Workmanship of Employees.

Let us send you free of charge our descriptive booklet and paint panel.

Thomas K. Chaffee Company

Providence, Rhode Island

TABLE VI.

BREAKING TESTS 30's WARP SIZED WITH THIN BOILING STARCH.

SOFT YARN						SIZED YARN		
Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
55.0	27.93	54.0	28.49	52.5	29.24	58.5	65.0	59.0
56.5	28.49	56.0	28.09	51.5	28.99	56.5	60.0	61.5
50.0	31.45	51.0	29.41	54.0	28.57	57.5	63.0	56.0
54.0	29.24	52.0	28.25	54.5	29.33	57.5	63.0	60.0
50.0	29.41	53.0	28.65	54.0	28.74	56.5	58.5	61.0
Av. 53.1	29.33	53.2	28.57	53.3	28.99	57.2	61.9	59.6

Average break Sized Yarn ....59.5 lbs.
Average break Soft Yarn ....53.2 lbs.

Increase due to Sizing..... 6.3 lbs.

Referring to Table I, it is seen that the average amount of weight added to 14's warp by pearl starch is 5.67 per cent, while the average amount added by thin boiling starch is 10.83 per cent. This is a low figure for pearl starch as it will be seen from Table IV that 8.61 per cent was added to 30's warp by pearl starch. This low figure for 14's warp was probably due to the fact that the size was boiled too hard in the size box and was kept constantly boiling in the kettle thereby thinning down the size. Also the figure 10.83 per cent does not represent the maximum for thin boiling starch of this particular grade, as the amount used was only a good average mixing and no attempt was made to weigh the warps.

Referring to Tables II and III, the difference in the results obtained with the two starches is even more marked in the breaking tests than in the weight tests, the average increase in strength due to sizing being only 4.5 pounds for pearl starch while for thin boiling starch the increase is 11.6 pounds. If the warps are properly sized, that is are pliable enough to weave well, a warp with a breaking strength of 146.5 pounds will produce much better results than a warp with a breaking strength of 139.7 pounds.

Referring to Table IV it is seen that the average amount of weight added by pearl starch is 8.61 per cent while the average for thin boiling starch is 14.1 per cent.

Referring to Tables V and VI it is seen that the average increase in breaking strength due to sizing is 3.6 pounds for pearl starch and 6.3 pounds for thin boiling starch.

In both of these tests the weaving showed a marked improvement due to the better sizing of the warps and the increase in breaking strength. The tests on the cloth showed a proportional increase in weight and also in breaking strength due to the thin boiling starch.

Example No. 3. In this instance the weaving was not running as satisfactorily as it should and this method was used to determine, if possible, the cause and what remedies should be applied to overcome the trouble. Tests were made without making any changes in the process to determine the weight added and breaking strength; similar tests were made after making some modifications in the sizing. These modifications consisted in slightly increasing the amount of tallow used per mixing and regulating the amount of steam entering the size box.

The weight determinations showed the amount of weight added by the regular formula to be 5.25 per cent, after making the changes the weight added was 6.65 per cent, a gain of 1.40 per cent. The breaking tests were as follows:

TABLE VII.

Breaking Tests 28½'s Warp Regular Sizing Process.

SOFT YARN						SIZED YARN		
Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
49.0	28.01	44.0	31.65	50.0	28.82	53.5	52.0	52.0
53.5	27.62	47.5	31.25	52.5	27.10	62.0	49.5	50.5
57.5	27.03	45.5	30.30	50.0	28.90	54.5	47.0	55.5
55.5	27.32	43.0	29.41	55.0	28.17	50.5	51.5	52.5
47.5	29.15	48.0	27.03	51.0	26.32	52.0		55.0
Av. 52.6	27.86	45.5	29.85	51.7	27.86	54.5	50.0	53.1

Average break Sized Yarn....52.5 lbs.
Average break Soft Yarn....49.9 lbs.

Increase due to Sizing..... 2.6 lbs.

TABLE VIII.

Breaking Tests 28½'s Warp Modified Sizing Process.

SOFT YARN						SIZED YARN		
Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Yarn No.	Break Lbs.	Break Lbs.	Break Lbs.
51.5	29.24	55.0	27.62	48.5	28.41	56.5	55.5	54.0
50.5	28.82	52.0	27.86	46.5	29.67	60.0	56.5	58.5
50.0	28.90	46.5	28.65	47.5	28.41	55.0	54.5	54.5
52.5	28.99	48.5	29.41	48.5	27.62	52.0	52.5	51.5
52.0	29.41	49.0	28.17	48.5	27.32	57.0	51.5	55.5
Av. 51.3	29.07	50.2	28.33	47.9	28.33	56.1	54.1	56.8

Average break Sized Yarn.....55.6 lbs.
Average break Soft Yarn.....49.8 lbs.

Increase due to Sizing..... 5.8 lbs.

As seen from the tables the average increase in breaking strength due to sizing by the regular process was 2.6 pounds while the average after making the modifications was 5.8 pounds. After making these changes the weaving showed a very marked improvement and the cloth was slightly heavier. While the increase in weight was small the increase in breaking strength was relatively large, and it is therefore evident that by reducing the amount of steam entering the size box, thereby reducing the temperature of the size, a more perfect cementing together of the fibres of the thread was obtained thereby producing a stronger thread which resulted in an improvement in the weaving.

These examples show the value of this method for determining the results which are being obtained from the sizing process, and show very markedly the importance to the mill of *knowing* what results are being obtained. The value of increasing the amount of weight put on the warps is, of course, a matter which must be determined by each mill, that is whether this additional weight can be taken advantage of in spinning, but regardless of the kind of starch being used the best results possible should be obtained from it. As shown in the tables the increase in breaking strength due to sizing varied from 2.6 pounds to 11.6 pounds while the amount of added weight varied from 5.25 per cent to 14.1 per cent. Taking these figures into consideration the importance of a mill determining the amount of weight and breaking strength which will produce the most efficient results cannot be too strongly emphasized.

Ball Bearing Hints.

Exhaustive tests in manufacturing plants have demonstrated that transmission losses due to friction of plain bearings amount to from 20 to 40 per cent of the total power used in the plant. 60 per cent of this loss can be eliminated by the use of ball bearings.

Shafts in plain bearings become "set" if the shafting is idle for any length of time. The oil is pressed out of these bearings and it is extremely difficult to start the shaft from rest. Again, when the bearings are operating at normal speed the rubbing friction is constantly consuming power at a sacrifice of efficiency.

Ball bearings eliminate all these difficulties. With ball bearings the starting friction is no greater than the running friction, and as it is unnecessary to provide for heavier starting loads, a much smaller motor may be used. Also with ball bearings the rolling friction is practically uniform from rest up to a very high speed, and on this account they not only start with a minimum effort but operate at all times with high efficiency.

So far we have considered only the saving in power and the consequent lower first cost of the driving motor. In addition to the saving in power, there is also a considerable saving in lubricant. It is necessary to lubricate ball bearings only three or four times a year. The lubricant supplied to each bearing at such times is considerably less than is generally supplied a babbitt bearing several times a month. This economy in lubrication results from the fact that the liberal lubricant chamber around the bearing is sealed on both sides which insures the retention of the lubricant, as well as protects the bearings from the intrusion of dust, grit, etc.

Most shafting in plain babbitt bearings is run at speeds from 100 to 400 r.p.m., and if run at higher speeds, it is necessary to lubricate the bearings frequently to avoid hot boxes. Ball bearings may safely be run at double or triple this speed and the size of the pulleys is thus cut down so that the rim speed is the same as formerly. A considerable saving in the cost of pulleys, or a much higher belt velocity may thus be effected. Thus, when operating at increased shaft speed, by keeping the main line pulleys close to their former diameter (thereby increasing the rim speed) narrower and lighter belts can be used.

Instances are frequently encountered where a manufacturer is using all his available power and is even operating his engines and boilers or motors at a heavy overload. He constantly faces a complete breakdown of his plant. In order to add more machinery it will be necessary for him to invest considerable money in an extension of his power-generating equipment. However, if he were to use self-aligning ball bearings this would be unnecessary. At least 60 per cent of the friction load would be eliminated, his load would be cut down materially and so he would have additional power for other purposes.

Barrett Specification Roofs

In Grand Rapids, for instance—

In almost any American city—you can pick out any of the leading commercial buildings and say with fair certainty, "*That building has a Barrett Specification Roof.*"

Take the city of Grand Rapids, for instance. Here are the four newest buildings: the new Bank, a new Wholesale Grocery, the new Y. M. C. A., and the new Hotel.

They all have Barrett Specification Roofs.

Most permanent buildings in the country carry this type of roof, and their popularity is not to be wondered at when you consider the following features:

First: Lowest unit cost per year of service.

Second: Guaranteed for twenty years, with a record which shows that they last much longer.

Third: Freedom from maintenance expense.

Fourth: Approved as "Class A" construction and take the base rate of fire insurance.

Tile, Slate, Shingles and Ready Roofings—all have their place on different types of steep-roofed buildings; tin is now rarely used for roofing. For all important commercial structures, however, the standard practise calls for Barrett Specification Roofs.

Guaranteed for 20 Years.

We are now prepared to give a 20-Year Surety Bond Guaranty on every Barrett Specification Roof of fifty squares and over in all towns in the United States and Canada of 25,000 population and more, *and in smaller places where our Inspection Service is available.*

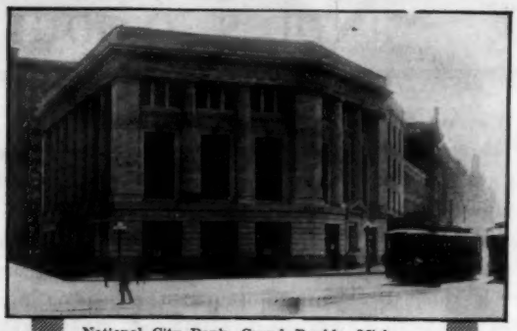
This Surety Bond will be issued by the United States Fidelity and Guaranty Company of Baltimore and will be furnished by us *without charge*. Our only requirements are that the roofing contractor shall be approved by us, and that The Barrett Specification, dated May 1, 1916, shall be strictly followed.

The Barrett Company

Largest Manufacturers in the World of Roofing and Roofing Materials

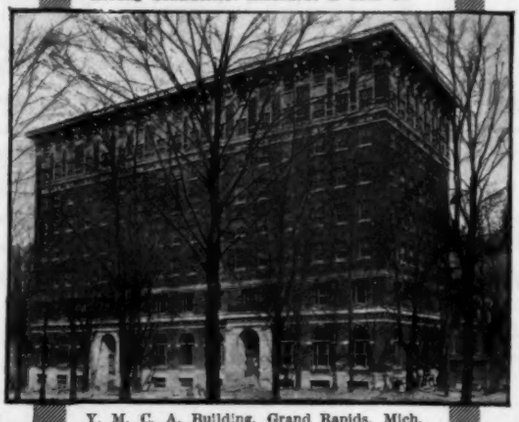
New York Chicago Philadelphia Boston
St. Louis Cleveland Cincinnati Pittsburgh
Detroit Birmingham Kansas City Minneapolis
Nashville Salt Lake City Peoria Seattle

The Paterson Manufacturing Company, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N.S.



National City Bank, Grand Rapids, Mich.
Architects: Williamson & Crow.
Contractors: Hauser, Owen, Ames Co.
Roofing Contractors: Elkenhout & Sons Co.

Caulfield Building, Grand Rapids, Mich.
Architects: Wernette, Bradfield & Mead.
Contractors: Horner & Kelly.
Roofing Contractors: Elkenhout & Sons Co.



Y. M. C. A. Building, Grand Rapids, Mich.
Architects: Robinson & Campau.
Contractors: Houser, Owen, Ames Co.
Rfg. Contractors: Geo. Van der Broek Co.

Pantlind Hotel, Grand Rapids, Mich.
Gen. Con.: Fuller Construction Co., N. Y. C.
Rfg. Con.: M. W. Powell Co., Chicago, Ill.
Waterproofing Con.: Tuttle Rfg. Co., N. Y. C.

Notes About Men You Know.

WM. W. HORNE, the well known secretary of the Georgia Manufacturers' Association, has resigned from this position and entered the employ of the Fulton Bag & Cotton Mills, at Atlanta, on March 1st. Mr. Horne, while a native Georgian, removed from the state when a boy and his past business career, up to two and a half years ago, when he came to Atlanta to organize the Georgia Manufacturers' Association, was spent in the east. Coming directly from Philadelphia to Atlanta, he surrendered a lucrative position with the Curtis Publishing Co. to undertake the work of organizing, upon a broad and comprehensive scale, the manufacturers of the state of Georgia. Mr. Horne's work in connection with the Georgia Manufacturer's Association is more or less familiar with every cotton mill operator in the state, and his ability as an organizer has gained recognition from practically all the diversified manufacturing enterprises of the state. In leaving the association as its Secretary, Mr. Horne was elected to serve as a member of its Board of Directors.

W. A. ERWIN, president of the Erwin Cotton Mills, of Durham, N. C., has been sick at the home of his daughter, Mrs. H. C. Jones, Jr., in Charlotte. Mr. Erwin was the victim of a severe attack of grip.

R. R. HAYNES, president and treasurer of the Cliffside (N. C.) Mills and one of the most successful cotton manufacturers in the South, dropped dead on Feb. 6th, at his winter home at St. Petersburg, Fla. He will probably be succeeded by his son, Charles R. Haynes, who has been the active manager of the Cliffside Mills for some time.

C. R. FORTH, Eastern Sales Manager of the Lewis-Hall Iron Works of Detroit, Mich., the manufacturers of the well known Hall Truck, has been spending a number of weeks traveling throughout the Southern territory looking over the field and establishing agencies.

GRIFFITH M. LEWIS, Manager of Willcox & Gibbs Sewing Machine Co., New York, was a recent visitor in Atlanta. He was on a business trip, visiting a number of Southern underwear mills, and it is understood that several nice orders were placed.

ENOCH WINDLE, for many years connected with the King Philip Mills of Fall River, Mass., has accepted a position as second hand of weaving at the Chase Mills of the same city.

JOHN RYAN has resigned from his position with the Tecumseh Mills, Fall River, Mass., to accept the position of second hand of carding at the Narraganset Mill at Fall River.

HENRY TUNSTAL, formerly of the Grant Yarn Mills at Fitchburg, Mass., has resigned as agent Wamsutta Mills at New Bedford, Mass.

FREDERIC R. BROWN, treasurer and agent of the Booth Mill at New Bedford, Mass., retired on February 1st from that position to enter the cloth market in New York City.

WILLIAM H. BENNETT, who for nearly a year has been advertising manager of the Searchlight Company, Chicago, has joined the forces of the Service Motor Supply Co., 15th and Michigan Ave., Chicago. This action is occasioned by the consolidation of the Searchlight Company with the Air Reduction Co. of New York City, and the removal of the Searchlight offices to the East.

JAMES WILSON, president and treasurer of the J. A. Gowdey Reed & Harness Manufacturing Co., Providence, R. I., died on Wednesday, January the 10th.

P. P. JONES has been transferred from night superintendent at Landis, N. C., to superintendent of the Fulton Cotton Mills, Athens, Ala.

JOHN A. PERKINS has resigned his position as superintendent of the Utica Steam & Mohawk Valley Cotton Mills, Utica, N. Y., to accept the position of agent of the Harmony Mills, Cohoes, N. Y., succeeding James Thomson who was appointed treasurer of the new Fairhaven Mills, New Bedford, Mass.

C. D. WELCH has been appointed agent and general superintendent of the Mayes Manufacturing Co., Mayworth, N. C. He was formerly superintendent of this mill.

HERBERT DANIELSON, superintendent of the Taunton plant of the New England Cotton Yarn Co., has been transferred to the Globe factory in Fall River, owned by the same people. His successor is Stephen Harrington, for fifteen years connected with the company.

MATT OUSTLEY, the popular Southern representative of the U. S. Ring Traveler Co., has returned from a vacation spent at Providence, R. I. His broken arm is about well again.

H. G. MCFALLS, of Newton, N. C., has accepted the position of superintendent of the Providence Cotton Mill, Maiden, N. C.

T. R. PLUNKETT has been appointed superintendent of the weaving department for the Berkshire Cotton Manufacturing Co., Adams, Mass.

C. L. DAVIS has resigned from his position with the Tupelo Cotton Mills at Tupelo, Miss.

GEO. HILL, formerly master mechanic at Tucapau, S. C., is now general master mechanic for the Victor-Monaghan Mills.

W. J. AUSTIN of Tuxedo, N. C., has accepted a position as night superintendent of the Apalache Mills, Arlington, S. C.

ROBERT T. BALDWIN, formerly purchasing agent for Joseph Bancroft & Sons Co., Wilmington, Del., has been appointed superintendent to succeed L. A. Yerkes, whose resignation took effect on Feb. 1.

C. A. SWEET has resigned as superintendent of the Woodstock Mills, Anniston, Ala.

EDWARD GAMBRELL of Harve de Grace, Md., will act as superintendent of the Harborough Mills, Bessemer City, N. C.

HARRY S. JOYCE, for many years in charge of mule spinning for the Ipswich (Mass.) Mills, has been made night superintendent of the mill.

D. M. MAYES has resigned as superintendent of the Halifax Mills, South Boston, Va., to accept a similar position at the Woodstock Mills, Anniston, Ala.

CECIL P. HOSTETTER has recently been appointed Dis-

Is Your Watchman Ready?

It doesn't take a strong man or a brave man to stop fire. But it does take a READY man.

The watchman who carries Pyrene at his side is ready for any incipient blaze.

How about YOUR watchman? Is he ready?

And your plant—have you Pyrene where workman can grab it at the call of fire?

Pyrene will damage nothing but fire. Always ready. Needs no recharging until used.

Pyrene Manufacturing Co.,

Every Appliance for Fire Protection.

New York City, N. Y.

Pyrene
KILLS FIRE
SAVES LIFE

trict Manager for the J. B. Ford Company of Wyandotte, Mich., with headquarters at 1522 Candler Building, Atlanta, Ga. For some five years Mr. Hostetter has been handling the line of the J. B. Ford Company in Northern Mexico, West Texas and Arizona, with headquarters at El Paso. Prior to that time he was stationed in the City of Mexico as a representative for the Kansas City, Mexico and Orient Railway, and was brought to El Paso by that organization when the big revolution of Madero began. Mr. Hostetter is arranging for a permanent residence in Atlanta, having brought his family here from El Paso, Tex., and is delighted with the business prospects this territory is holding out for his company in the form of wider markets for the chemicals they manufacture.

E. J. PARTINGTON has accepted a position as overseer of bleaching and finishing for the Bellman-Brook Bleachery Co., Fairview, N. J. He was formerly employed with the Easton Finishing Co., Easton, Pa.

T. E. MULLIS of Statesville, N. C., has accepted a position as overseer of spinning at one of the Marlboro Mills, McColl, S. C.

WM. PITTS has resigned as night overseer of twisting and winding at Prendergast, Tenn., to accept a similar position at the Oxford (N. C.) Cotton Mills.

JAMES BOYCE of Fall River, Mass., has taken charge of the combing department at the Nemasket Mills, Taunton, Mass.

COL. SAM W. WILKES of Atlanta, Ga., formerly Division Freight Agent of the Georgia Railroad, has been promoted to the position of Publicity Agent for the Georgia Railroad, the Atlanta and West Point Railroad and the Western Railway of Alabama. Col. Wilkes has a wide acquaintance in the Southeast, and in his new position will be able to do much to assist the three progressive railway lines he represents into a more helpful cooperation with the great industrial interests of the sections which they traverse. Col. Wilkes was one of the prominent figures in attendance at the recent Convention of Georgia Manufacturers at Savannah, Ga.

ARTHUR C. BROWN, agent for the Falls Co., at Norwich, Conn., was a very welcome visitor at the offices of COTTON during the past month. He has been spending several weeks looking over the Southern territory, and expresses great admiration for the manufacturing opportunities of the southern section of our country.

J. V. JAMES has resigned as overseer of twisting and winding at the Modena Mills, Gastonia, N. C., and is now overseer of carding and spinning at the Kindley Mills, Mt. Pleasant, N. C.

W. E. DIGGLE has become overseer of dyeing at the Statesville (N. C.) Cotton Mills.

GEORGE OAKLEY SMALLEY, formerly general manager of the Bound Brook Oil-less Bearing Company, Bound Brook, N. J., was recently elected treasurer of this company.

SPENCER WEART, formerly second vice-president of the Bound Brook Oil-less Bearing Co., at Bound Brook, N. J., has been elected president of this organization, taking effect February the 1st.

G. L. ADKINS has been promoted from second hand in night spinning to day overseer of spinning at the Lenoir (N. C.) Cotton Mills.

J. H. NEAL, of Rutherfordton, N. C., has accepted the position of overseer of carding and spinning at the Sevier Mills, Kings Mountain, N. C.

V. A. HOWARD, of the Sevier Mills, Kings Mountain, N. C., has become overseer of night spinning at the Adrain Mill, Mt. Holly, N. C.

GEO. W. RAY, of Pelzer, S. C., has accepted the position of overseer of spinning at the Apalache Mills, Arlington, S. C.

M. B. LESLIE has resigned as overseer of weaving in Easley Mill No. 3, Liberty, S. C., and accepted a similar position at Ninety-Six, S. C.

C. W. PARROT, of Atlanta, Ga., has accepted position as overseer of spinning at the Meritas Mills No. 2, Columbus, Ga.

JOHN L. DABBS, the Southern representative for the National Aniline Chemical Co., with offices at Charlotte, N. C., was a visitor in Atlanta during the early part of the month. While there he was a guest at the banquet of the local Rotary Club.

T. W. WOODHAM, formerly superintendent of the Jonesboro Knitting Co., Jonesboro, Ga., has accepted a similar position with the Fuller Hosiery Mills at Villa Rica, Ga.

ROBERT ARMSTRONG has accepted position as overseer of spinning at the Brown Mfg. Co., Concord, N. C.

J. S. CARLTON has accepted position as assistant superintendent of Ida Yarn Mill, Laurel Hill, N. C.

DAVID CRAWFORD has accepted the position of overseer of carding at the Deep River Mills, Randleman, N. C.

W. P. CASTLEBERRY, formerly overseer of spinning at Calhoun Falls, S. C., has accepted position with the Republic Mills, No. 2, Great Falls, S. C.

J. D. TAYLOR, Secretary-Treasurer of the Leaksville, Woolen Mill was a visitor in the Philadelphia market in the early part of the month.

M. L. BALICK has resigned his position as second hand of the twisting room at the Clara Manufacturing Company, of Gastonia, N. C., to become night overseer of a similar department at the Modena Cotton Mills of the same place.

O. L. WIGGINS, formerly superintendent for the Madeline Hosiery Mill at Ridgedale, Chattanooga, has resigned his position at this mill.

E. E. STEER has accepted a position as superintendent with the Madeline Hosiery Mill at Ridgedale, Chattanooga, Tenn.

FRED N. CONOVER, formerly of the I. E. Palmer Company, Middletown, Conn., has accepted a position as superintendent of Beverly Textile Mills at Beverly, N. J. In this connection it is of interest to note that the new mill reported sometime ago as being built, is now receiving its power plant, which is of the heavy type De LaVergne oil burning variety.

C. R. MAYER, of Charlotte, has accepted a position with the Charlotte office of the National Aniline and Chemical Co., and will handle the territory of North and South Carolina under John L. Dabbs, the Southern manager.

GUY L. MELCHOR, reported last month as having accepted a position with the D. D. Felton Brush Co., of Atlanta, Ga., has resigned this position to accept a position with the Arabol Manufacturing Co., of New York, handling the states of Georgia, Alabama and Tennessee. This territory was formerly handled by B. R. Dabbs, who resigned to go with the National Aniline and Chemical Company.

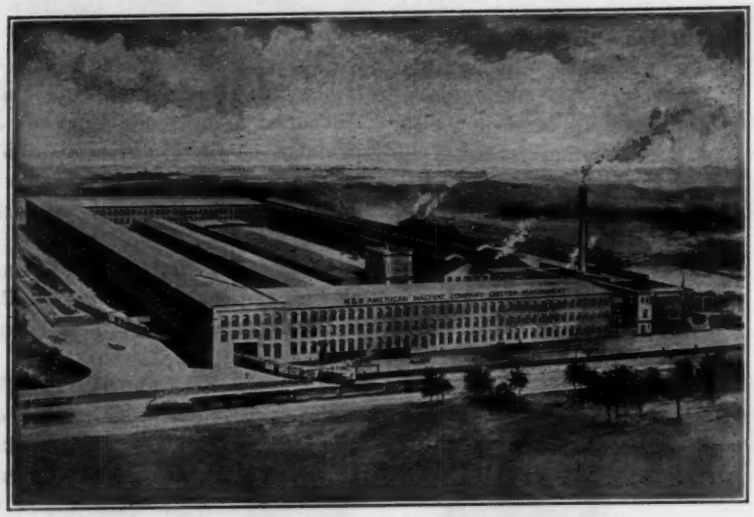
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

GEORGE M. MACNIDER, textile chemist for the Corn Products Refining Co., of New York, and with headquarters at Greenville, S. C., died of pneumonia on Tuesday afternoon, February 27th at the Davis and Fischer Sanitorium in Atlanta. Dr. MacNider was a member of the Sigma Nu Fraternity and one of the organizers of the Greenville Rotary Club. The funeral took place at his old home at Chapel Hill, N. C. He is survived by his wife, who was a Miss Louise Lamar of Monticello, Fla., his mother, Mrs. S. M. MacNider, and a brother, Dr. William MacNider of Chapel Hill.

CAESAR CONE, vice president of the American Cotton Manufacturers' Association, and head of a string of cotton mills in Greensboro, N. C., died at his home on March 1st from apoplexy. He was 58 years old.

A meeting of the stockholders of The Obex Laboratories Co. was held at the offices of the company, Marietta, Ohio, on Tuesday, the second of January. G. A. La Vallee, president of the company, read a report summarizing the year's work, which report showed a highly successful year. It was voted to change the name of the company to "The Obex Company," and the capital stock was increased from $200,000 to $750,000. A new board of seven directors was elected, consisting of the following members: Judge E. B. Follett, R. M. Noll, J. H. McCoy, C. J. La Vallee, C. B. Ballard and G. A. La Vallee, all of Marietta, and A. Alexander, of New York City. All of the products of the company are sold exclusively through the National Gum & Mica Co.

The Self Starter.

A great many people have to be cranked up every day, but now and then you see some fellow who is a self starter.

The self starter comes down to the office in the morning, hangs his coat on a hook and, zip—he gets into immediate action.

The other fellow potters around for an hour and finally, gets busy when the "boss" maps out his day's work.

Now, the man who has to be cranked up at 8:30 a. m. is not by any means a neer-do-well. He turns out effective work, when he is told what to do, but he lacks initiative. He is minus the instinctive or intuitive ability to size up a situation, see what ought to be done and do it.

The man, in charge of a big force of employees, has no time for infinite detail. It's almost as much trouble to tell you how and when to do things as it is to do them himself.

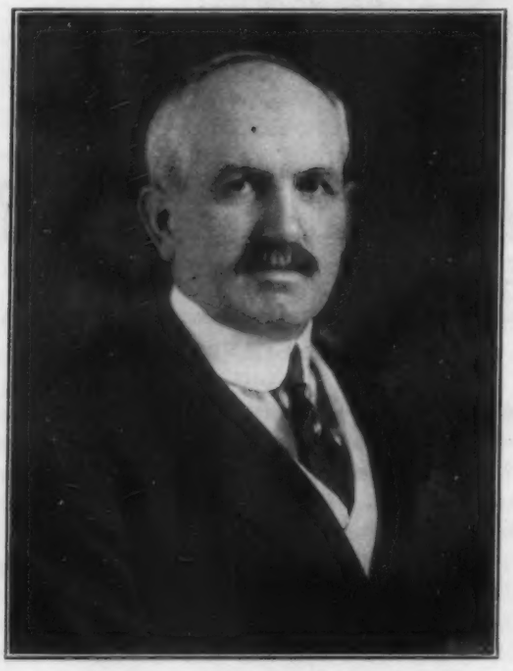
But he has only a few self starters and therefore he has to let you pike along, realizing if he does not keep the props up under you, you will fall.

But he has his eye on the self starter, all the time and when there arises a new job or he is looking for somebody for a vacancy higher up, for whom he has to be personally responsible, does he elevate the fellow who has to be cranked up? He does not. He pins his faith on the self starter, the man who has all the latest mental appliances and who can take the new job, throw himself into high gear and observe the rules of the road.

If you are going to do any work this year, better be a 1917 model.—*The Right Way.*

The Certainteed Products Corporation.

The Certain-teed Products Corporation of St. Louis, Mo., has recently been organized with a capital stock of $25,000,000. This corporation includes two St. Louis paint concerns of national renown, viz., the Mound City Paint and Color Co., and the Gregg Varnish Company, and also includes the General Roofing Manufacturing Co., which company makes over a third of the world's manufactured roofing in its eight great plants in Missouri, Illinois, Pennsylvania, New York and California. The announcement of this big development which recently appeared in the St. Louis papers, was based on information furnished by George M. Brown, president of the General Rooofing Co., and also president of the new Certain-teed Products Corporation, to the effect that the General Roofing Company had purchased the Mound City Paint and Color Co., and the Gregg Varnish Co., both of St. Louis, as well as the Lockport Paper Company's mill at Niagara Falls, N. Y.



PRESIDENT GEORGE M. BROWN.

President Brown attributes the phenomenal growth of the General Roofing Co., to the persistent advertising of satisfactory products.

The General Roofing Company began business in 1904 with an initial capitalization of $20,000, and has progressed steadily, regardless of varying general trade conditions, the sales growing from $150,000 in 1905, to $5,200,000 in 1916. The sales of the paint and varnish works and the felt mill now acquired, would add more than $1,250,000 to the 1916 record.

In the new company's formation there will be issued $3,500,000 of first preferred 7 per cent cumulative stock, $1,925,000 second preferred 7 per cent convertible stock and 60,000 shares of common stock. There is no mortgage or funded debt, and a very substantial majority of the stock is owned by the men who are in active charge of the business.

The increased capital available under the new organization will be used in extending the business of the company. The large mills in East St. Louis and Marseilles, Ill., York, Pa., and Richmond, Cal., will be enlarged and improved. The paper mill at Niagara Falls will also be enlarged and a roofing factory will be built adjoining it.

The company expects to enter in an aggressive manner the paint and varnish field on a large scale, and it was because of this plan that the Mound City and Gregg companies were taken over.

The new corporation will be under the direction of George M. Brown, president; Smith Allison, New York, Audenried Whittemore, Chicago; J. S. Porter, and J. E. Schlafly, of St. Louis, vice presidents; J. D. Collins, of St. Louis, secretary and treasurer. All these gentlemen were formerly officials of the General Roofing Manufacturing Co.

A board of directors for the new corporation has been elected, and includes George M. Brown, Smith E. Allison, J. Scott Porter, M. J. Moore, Edward Hidden, J. F. Schlafly and Robert M. Nelson.

President Brown advises that the power of effective advertising has perhaps never been demonstrated as forcibly as in their case. The name "Certain-teed" has become familiar with people who have never heard of the General Roofing Company, because of the wide publicity given this trade mark and the quality of products sold thereunder. He advises that the same policies will be employed in handling the paint and varnish business that has made the roofing business such a material success, although he desires it distinctly understood that these two paint and varnish concerns will be operated as separate and distinct organizations and will continue to market their well known brands of paints and varnishes, retaining their present salesmen and office force, as well as their factory organization. However, all surplus manufacturing facilities of these concerns will be utilized for the manufacture of Certain-teed paints and varnishes, and these will be made under the supervision of the chemists of the Certain-teed Products Corporation and by their own formulae.

In his annual message of October 23, 1916, the Governor of the Gold Coast Colony said that "the cotton-growing experiments in the Northern Territories, Gold Coast Colony, had now been definitely abandoned, and the representative of the British Cotton Growing Association has finally left the Dependency." Continuing, he said:

Those who today engage in the enterprise of cotton-growing must occupy a position that will enable them successfully to compete with other areas in tropical or sub-tropical countries where the land is specially adapted for the cultivation of this crop, where the agricultural population is not only abundant but of a very frugal habit, and where transport difficulties have been reduced to a minimum. Owing to their inaccessible geographical situation, to the consequent difficulties and expense of transport, and to the slack interest which the native population of the Protectorate generally evinced in the cultivation of cotton, the Northern Territories were handicapped from the outset.

It is easier to look over a man's faults than it is to overlook them.

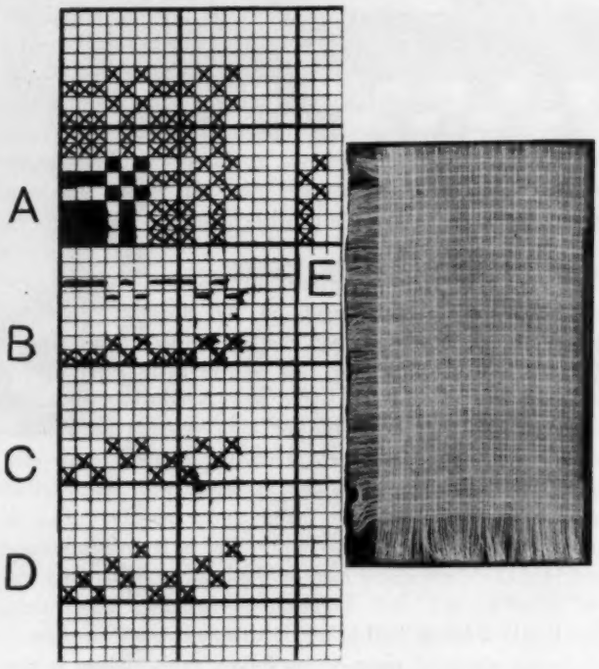
How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Analysis of a Cotton Fabric.

EDITOR COTTON:

The sample of cloth submitted by your correspondent and photographically reproduced represents a suitable fabric for use in the manufacture of ladies' and gentlemen's union suits and shirts. It is all cotton and equivalent to plain weave, but since at short intervals three threads weave as one and three picks weave as one, the effect produced is that of a neat little check pattern.



Perhaps the first object in the analysis of a fabric should be that of finding the design in order to be sure that the pattern may be produced on the looms which are available. In the pattern under notice little trouble would be experienced. The complete design is shown at *A*, in which there are four repeats—the unit design being shown in solid marks, while the three remaining units appear in crosses.

Both warp and filling are white; all the warp threads are of the same size, and all the filling threads are also of the same size but different from the warp. The particulars are as follows:

Warp: 3 threads weaving as one and 3 single threads in each repeat.

Filling: 3 picks weaving as one and 3 single picks in each repeat.

The arrangement of the threads in the harnesses may be such that only two harnesses are required while other arrangements involve the use of three or four harnesses, although they may be operated as two by tying two together. Three different ways of drafting the harnesses are shown. Thus:—at *B*, two harnesses only are used; at *C*, three harnesses are used, but the first and second would be tied together; at *D*, four harnesses are used, in which case harnesses 1 and 2 would be tied together, and so would harnesses 3 and 4.

If we consider that each pick of filling is sent through independently of the others, then the weaving plan or method of operating the harnesses for draft *B*, *C* and *D* would be as shown at *E*.

With the threads drawn separately as indicated in the drafts, the individual threads in each group retain their respective positions, and the same remark applies to the filling when the picks forming each group are sent through separately. If the three successive threads which intertwine in the same order are drawn through the same eye of the harness, there is a possibility of any of the threads in the group getting to the wrong side of its neighbor. Similarly, if the filling is sent through as a three-ply untwisted pick, followed by three single picks, the same defect might, and indeed, would appear among the three similar successive picks. Moreover, this method of introducing the filling would involve the use of a check loom. Hence, the best result would obtain if each thread is drawn through a separate eye as indicated in the drafts, and each pick is sent through separately, taking care, of course, to make provision for catching the filling at the selvages so as to prevent its partial withdrawal when passing through the same shed as the preceding pick. The drawing in of the threads would naturally be simpler and more quickly done if the three similar threads were drawn through the same eye, and fewer eyes would also be necessary.

In the finished state, the fabric contains 90 threads per inch and 84 picks per inch. Hence, if the finished width be 30 inches, there will be:—

$$90 \times 30 = 2700 \text{ warp threads.}$$

With the draft as shown at *B*, it is evident that No. 1 harness would require to have:—

$$2700 \times \frac{4}{6} = \frac{10800}{6} = 1800 \text{ heddles}$$

whereas No. 2 heddle would have:—

$$2700 \times \frac{2}{6} = \frac{5400}{6} = 900 \text{ heddles}$$

1800 heddles forms probably too large a number to be accomodated in the width required, and it would probably be much more suitable to employ the draft illustrated at *C*. In this case there are three harnesses, and since each contains exactly the same number of threads, it follows that such harness would have $27 \div 3 = 900$ heddles in use.

The reeding of the warp threads would probably be as indicated immediately under the design *A*, that is, three

single threads in one split, and then one single thread in each of the next three splits. This is equivalent to 6 threads in 4 splits. Since there are 90 threads per inch in the 30 inches of finished cloth and since the reed width, as will be shown is 32.2 inches, we have:—

$$\frac{90 \times 4 \times 30}{6 \times 32.2} = 55.8$$

say 56 splits per inch in the reed. The analyses for the warp and the filling are as follows::

Warp: Length occupied by thread in cloth = 126 units. Length of withdrawn thread = 129 units and for 100 yards of finished cloth we require:—

$$\frac{100 \text{ yards} \times 129 \text{ units}}{126 \text{ units}} = 102.4 \text{ yards of warp.}$$

Filling: Length or width occupied by pick in cloth = 54 units. Length or width occupied by withdrawn pick = 58 units, and for 30 inch width of finished cloth, we require:

$$\frac{30 \text{ in.} \times 58 \text{ units}}{54 \text{ units}} = 32.2 \text{ in. width in reed.}$$

Two square inches of the small sample weigh 2.27 grains. Hence, since there are 36 inches × 30 inches = 1080 square inches in one yard of cloth, we have:—

$$\frac{1080 \times 2.27 \text{ grains}}{7000 \text{ grains per lb.}} = 0.175 \text{ lb. per yard}$$

or 2.8 ozs. per yard, which is equivalent to:—

$$\frac{1}{0.175 \text{ lb.}} = 5.7 \text{ yards per lb. approximately.}$$

Count of Warp: 12 warp threads, each 2½ in. long or 30 in. in all, weigh 0.22 grains.

$$\frac{30 \text{ in.}}{36 \text{ in.} \times 840 \text{ yds.}} \div \frac{0.22 \text{ grains}}{7000 \text{ grains per lb.}} = \text{count}$$

That is $\frac{30 \times 7000}{36 \times 840 \times 0.22} = 31\text{'s or } 32\text{'s cotton}$

Count of Filling: 12 filling picks, each 3 3/16 in. long or 38¼ in. in all, weigh 0.2 grains. Thus

$$\frac{38.25 \text{ in.}}{36 \text{ in.} \times 840} \div \frac{0.2 \text{ grains}}{7000 \text{ grains per lb.}} = \text{count}$$

That is $\frac{38.25 \times 7000}{36 \times 840 \times 0.2} = 44\text{'s cotton approximately.}$

In this analysis no allowance has been made for loss in bleaching, nor for any additional weight due to sizing.

Woodland.

A piece of work well turned out has an indefinable air of friendliness about it; that is, it makes friends easily. The careful manufacturer is the one who puts into his fabrics the things which create this favorable impression. For a product to make friends is practically synonymous with gaining customers; and the well-judged use of recognized staples bring about this profitable condition. A line of specially prepared staples for the textile trade is made by the Arabol Mfg. Co., 100 William St., New York City. Arabol products make friends wherever used.

Cooperating With Overseers.

EDITOR COTTON:

One often hears an overseer, in speaking of his manager or agent, make the remark, "yes, he is a hard man to get along with". It is interesting to analyze some of the reasons for this remark.

The average agent has been through the mill. An abnormal capacity for leadership has marked him for promotion. He is recommended by some other mill man as possessing qualities of executive ability combined with knowledge of the actual manufacturing details. Accordingly in due time he is offered a position at the head of a mill and is held responsible to the board of directors for one thing—dividends.

With the assumption of this responsibility comes the realization that there is no one in the mill to whom he can appeal for confirmation of the wisdom of his course. As overseer he was one of a series of units actually controlled by the decrees issued from the office. As agent he is the focus for all these units. What wonder is it that he soon finds under the pressure of business the disinclination and even the actual lack of time to have a friendly chat with his overseers regarding work. That is one thing that the average overseer resents. He does not want to be considered a mere tender of machines, as impersonal as a piece of iron. He does not want an order thrown at him in a cold monotone. Yet that is precisely the attitude taken by some agents at present.

Probably it is that attitude of frigidity that causes most often the remark made at the beginning of this article, and it is the gravest mistake an agent can make. Men are human. They all like to run their departments efficiently and to that end often come across some method or device designed to help not only themselves but the whole plant. The overseer knows that if he has an idea which can be presented to his superior, with the further knowledge that it will be taken under consideration, is sure to be a booster for the mill. Yet it is an unpleasant fact that there are many men at the head of mills who will not listen to any such suggestions—figuring, very likely, that it might be an indication of weakness on their part.

In the stress of competition today, fault-finding is necessary. Yet there are two ways of going at this. One is constructive fault-finding, the other is plain "kicking." The latter course is the easier and hence more often adopted. The man who is continually nagging his overseers about one thing or another, without suggesting any possible remedy, soon will find if he watches carefully, that his men become hardened to being hauled onto the carpet and take less interest in attempting to correct matters. In a short time he will find that he is unable to keep an overseer very long and that the various departments are in a more or less constant state of upheaval. It is all very well to figure that it is possible to get another man whenever needed, but the cost of such changes should be taken into consideration.

The ability to mix with men is a natural gift with some and an acquired characteristic with others. A courteous "good-morning," simple as it may be, is worth dollars and cents to every agent. Yet whether from fear of loss of dignity, or what not, there are many men who will not

ADMIRALTY
NEW RIVER SMOKELESS
COAL

The claims that are made for ADMIRALTY (New River) Smokeless Coal are completely substantiated by those who are using the fuel.

The United States Government, the Italian Government, and many steamship lines, railroads, and large industrial plants stand ready to vouch for the marked superiority of ADMIRALTY SMOKELESS COAL—as a fuel magnificently adapted to steam purposes.

A semi-bituminous, low volatile product of smokeless combustion—ADMIRALTY possesses an almost incredible purity—develops an extraordinary heat unit efficiency—and leaves a minimum of ash residue.

Analysis made by the United States Government of twenty-five consignments of ADMIRALTY for barges and steamers at Hampton Roads, approximating 43,000 tons, resulted as follows:

Moisture 2.6	Vol. Matter 18.9	Fixed Carbon 76.5
Ash 4.5	Sulphur .88	B. T. U. 14,921

The Chesapeake & Ohio Coal & Coke Co.

(Selling Agents for New River Collieries Co.)

EXECUTIVE OFFICE, 120 Broadway, New York City

WESTERN OFFICE
First Natl. Bank Bldg.
Cincinnati, Ohio

SHIPPING OFFICES
Sun, W. Va.
Eccles, W. Va.

TIDEWATER AND EASTERN OFFICE
Board of Trade Bldg.,
Norfolk, Va.

FOREIGN AGENTS

W. H. Newman
Trafalgar Bldgs.,
Northumberland Ave.
London, S. W.

M. C. Piggott
4 Lloyds Ave.
London, E. C.

SOUTH AMERICA
Chadwick, Weir & Co., Ltd.
25 De Mayo, 158
Buenos Ayres

observe even that small etiquette. The scheme of weekly conferences with the various overseers, to talk over details, has been tried and found to aid materially in promoting harmony as well as efficiency; and if the man at the head has a natural or acquired personality and faculty for being a good mixer, he is the one about whom it will never be said "He is a hard man to get along with".

Observer. (Mass.)

"American" Steel Split Belt Pulleys.

The thing that should be most sought in any kind of power transmission project is "greatest ultimate economy." This is a very good term, for it includes not only the first cost of the belts and pulleys, but the upkeep, life, slip, dependability, and even the cost of coal fired into the boiler furnaces.

Pulleys should first of all have a high coefficient of friction so that the belts running upon them will not slip. They must be strong enough to resist collapse in case of sudden overload or in case the belt catches and breaks. They must be made "true," as wabbling is always unsightly and generally a symptom of inefficiency. The surface of the periphery must not be rough, for belts are bound to slip somewhat, and when a belt slips on a rough pulley, premature wear is inevitable. Slip also generates heat, and since heat is undesirable in belts, causing them to burn, get dry and crack, it is clear that the pulley should be made of some material that will conduct the heat away quickly and radiate it into the atmosphere. A "cool pulley" is desirable.

"American" steel pulleys are strong enough to resist collapse and in extreme cases where one might collapse in spite of its great strength, there is no flying to pieces to endanger the workmen, for the ducility of the metal precents such failure. This is a strong point for the steel pulley on the "safety first" side of the ledger. As for "trueness," after the forms and dies are once made, all the "American" steel pulleys are just alike, within the limits of good mechanical practice. They are all true, strong, balanced, and carefully inspected.

Steel does not swell or shrink. This is an advantage over wood and paper for pulley construction. Hence, when an "American" steel pulley is once clamped into position, there will be no slipping on the shaft. It should always be remembered that in a main belt drive, where one of the pulleys slips 1 per cent, 1 per cent of the fuel will be lost thereby. If both pulleys slip the same amount, the total slip will be 2 per cent, wherefore 2 per cent of the fuel is lost.

"American" steel pulleys are light. They do not weigh down the shafts with useless mass and eat up power unnecessarily in that way. In drives that must be reversed frequently lightness is particularly desirable. However, it can be almost universally stated that light pulleys are always desirable, provided they are strong enough.

The Canadian S K F Co., Limited, has been organized under Dominion charter for the manufacture and sale of S K F self-aligning ball bearings in Canada. All correspondence should be directed to Toronto in which city headquarters have been established at 47 King Street, West.

Twist and Breaking Strength.

EDITOR COTTON:

I will try to answer a part of the questions asked by Carder, (Mass.) in the February issue, on breaking strength and twist.

First, he asks, which is the correct standard to use on 1⅛ inch American cotton for breaking strength?

It seems that he should have given the ones that he meant for us to choose from, when he said, "which is the correct one."

Draper gives the breaking weights of American yarns spun from American cotton, averaged from sample skein tests from several hundred American mills, as follows: No. 10's, old weight 168.7 lbs. per skein of 120 yards; new breaking weight 191 lbs. on warp yarns, No. 20's, 88.3 lbs. old weight, new weight, 96 lbs. No. 30's old weight 57.3, new weight, 64., etc.

The rule to find the breaking weight of any number of yarn is to add the number of the yarn to 1900. For instance take No. 20's; $1900 + 20 = 1920 \div 20 = 96$, the breaking weight of No. 20's yarn. This is for the "New Standard."

The old standard is to use 1687 instead of 1900, as for the new standard, and No. 20's on the old standard would be $1687 + 20 = 1707 \div 20 = 85.3$ lbs., the breaking weight for the No. 20's on the "Old Standard.'

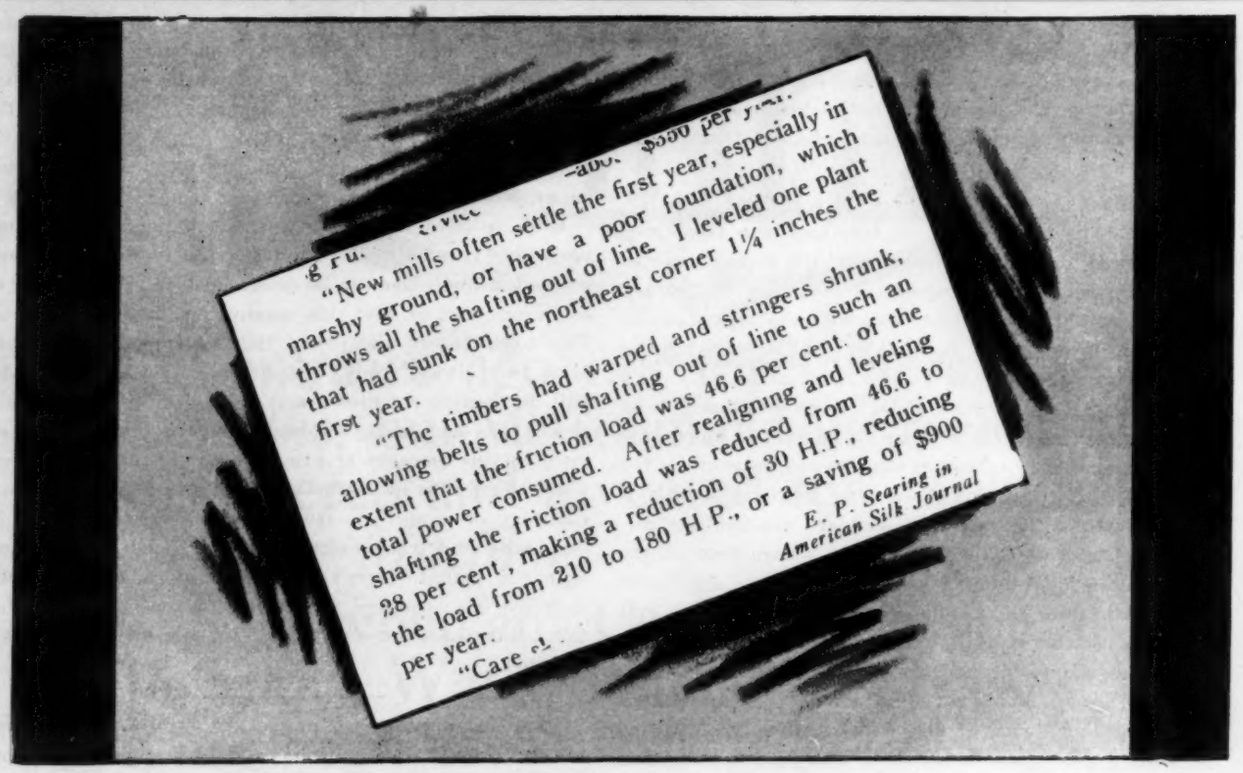
Now the question is, does he mean one of these?

If "Carder" is an agent he should purchase what his trade calls for; if he is the manufacturer, he should give the purchaser what he calls for, for it is immaterial with the manufacturer what the trade calls for so long as the price is paid for the goods. If the order calls for a certain twist per inch it should be put into the yarn just as the order calls for it, which gives the required breaking strength.

Second, what will increase the breaking strength? Medium twist, and even yarn, is my theory and experience, free from excessive stretches on roving and spinning frames.

Third, what can be done in the carding room to aid toward this result? To begin with, an even mixing should be done in the picking room, and all roving waste should be mixed evenly all during the day as well as spinning waste, by a distributing automatic feed hopper, this with other arrangements that prevent the laps from splitting and the evener belts working properly, will give even laps. The next step is to set the cards to a true gauge at both sides of the cards, have the gage close enough to produce an even web, but not too close so as to rub; a card set to too slack a gauge will cause the web to be neppy with white specks, as if chewed up, and will not draft smooth. The drawing frames with good gears and set the proper depth into one another and the steel rolls kept cleaned, and oiled properly.

The tension must not be too tight. Have the sliver run with a wavey tension, and be careful not to let the cans run too full on the cards as this will have a tendency to stretch the sliver, and once stretched after it leaves the evener on the pickers, it cannot be evened up; all that can be done then is the doubling of it, and what that lacks of evening up, it does not get. On the slubbers the twist


"New mills often settle the first year, especially in marshy ground, or have a poor foundation, which throws all the shafting out of line. I leveled one plant that had sunk on the northeast corner 1¼ inches the first year.
"The timbers had warped and stringers shrunk, allowing belts to pull shafting out of line to such an extent that the friction load was 46.6 per cent. of the total power consumed. After realigning and leveling shafting the friction load was reduced from 46.6 to 28 per cent, making a reduction of 30 H.P., reducing the load from 210 to 180 H.P., or a saving of $900 per year.
E. P. Searing in American Silk Journal

DO YOU WASTE POWER BY POOR ALIGNMENT?

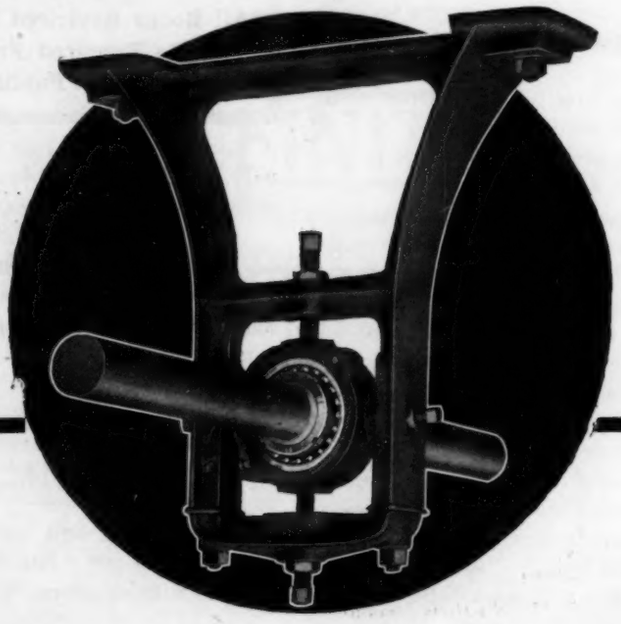
Everyone must realize the truth in the above clipping. $900.00 a year wasted by misalignment! Mere willful waste which can be wiped out by the use of SKF Self-Aligning Ball Bearing Hangers. You can operate your transmission equipment without wasting power or effort on your part because:

SKF Self-Aligning Ball Bearing Hangers adjust themselves to any deflection of the shaft. They cannot bind---they always run easily and smoothly. The bearing itself compensates for any misalignment and every possible ounce of power is transmitted for useful work.

Send for new Hanger Bulletin and complete facts today.

SKF BALL BEARING CO.

HARTFORD CONNECTICUT



should be just enough to draw good and not break back on the next machines, whether intermediates, roving or jack frames. Avoid excessive drafts on all machines, scale it down to an average draft on all machines in the carding room and watch the tension on the slubbers and roving frames as closely as on the drawing frames, if not a bit closer.

Then when the spinning frames are reached with the stock, watch the skewers and see that they run free from chokes around the top and bottom; that the roving traverse works freely and has the regular stroke; that the leather top rolls are put in the right way, with the laps made in the sticking of the cotts running off. (This also applies to the roving frames.)

Fourth, what is the best standard to use in placing twist on spinning frames? This is hard to determine unless one knew just what class of cotton that was to be worked, for the shorter the staple the more twist there is to be put into the yarn. I am using the standard on middling cotton which for warp is 4.75 times the square root of the number, and on the filling I use 3.25, constant. Of course at times I have to change, but it's owing to the stock that I have to use. I make it a rule to stay as close to the standard as is possible under working conditions.

Fifth, I don't know as I can answer at present as I haven't any of the data of the breaking strength of twisted yarns, or 2 ply yarns on hand. I have had it some time back but I cannot find it just at this time.

Carder. (Ga.)

Cork Inserts in the Mill.

The demand for output under the prevailing conditions has assumed such great importance that the production possibilities of efficiency devices such as Cork Inserts are claiming the interest of every mill.

Though by no means an untried proposition in the South the use of Cork Inserts in their various forms here has not been nearly as widespread as the service which they have given in the Northern mills seems to warrant. Some of the early installations dating as far back as 1902 are reported by Northern mills to be giving satisfactory service today in places where the ordinary equipment which they replaced never worked properly.

Continual study from the first has been given to the adaptation of cork inserts to textile machinery. The results have been not only the general installations of cork insert pulleys on all sorts of drives from small motors to 1500 h.p. main drives, but many special applications such as spinning and twisting frame pulleys, speeder cones, slasher tensions, loom frictions, quiller washers, railway head belts, loom brake facings, etc.

The advantages of cork inserts over the equipment in more common use are the great frictional efficiency, the ability to carry heavy loads without slipping, the uniform service under bad conditions, the ability to transmit full power even where there is excessive dampness or dust or where oil cannot be kept off, and the ability, when adjusted for the purpose, to maintain a uniform slipping tension such as is required for the satisfactory operation of slasher tensions, loom let-off, quiller spindles, etc. Cork insert pulleys make it possible to run with slack belts, which increases the life of belts and bearings, to do away with the use of sticky belt dressings with all their trouble, expense and injury to belts; and to keep the machines running at the full rated speed all the time, whatever the conditions, thus increasing production, improving quality, and reducing the unit cost.

Cork insert pulleys are made in all types, cast iron, paper, steel, and wood rim with iron center. This makes it possible to have the pulley which is best adapted to any particular requirements. Naturally the type which should be used in any place can be determined only by a study of conditions, and to meet this requirement the manufacturers The Cork Insert Company, 162 Federal street, Boston, Mass., are always ready, without obligation on part of the mill, to analyze conditions and make definite recommendations. The same thing applies to the various other devices made by this company and the field covers practically every place where it is necessary to obtain either great frictional efficiency or a uniform tension. Each case is treated individually and when installations are made in accordance with the manufacturer's recommendations the equipment supplied is guaranteed to give the user complete satisfaction. Correspondence in regard to particular problems is solicited.

Anticipating the close of the European war, certain cotton mills, having common looms which war conditions have enabled them to operate at an unexpected profit, have ordered Northrop looms for delivery in 1918. The reason for placing orders for delivery so far in the future is that the mills will for the immediate present and for perhaps the remainder of the year 1917 have the benefit of the maximum product of the common looms with the goods sold at war prices; with the expected slump or falling off in business later on, they can better spare the loom product while the change is being made from common to Northrop Looms and the profit made before the change will in many cases go a long way towards paying the bill for new looms.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

CLARK'S DIRECTORY OF SOUTHERN TEXTILE MILLS. January, 1917, edition. 184 pages. Price $1.50. Published by the Clark Publishing Company, Charlotte, N. C.

This is the eleventh edition of Clark's directory, which has been increased to include the knitting mills as well as the cotton mills of the South. This directory does not include silk mills, woolen mills or batting mills, except those that spin cotton. The pink page addition in the back of these directories contains hints for traveling men, and is considerable assistance to them, inasmuch as it contains a list of the larger buyers of the Southern states with the location of their offices.

The editorial department of COTTON would like to get in touch with any Southern mill in a position to manufacture 22 x 18 cheese-cloth.

REFINITE

REGISTERED U.S. PATENT OFFICE
-TRADE MARK-

Centuries ago our forefathers used a *Scythe*, but McCormick just recently discovered and invented the modern *Mowing Machine*.

So,—when any Concern asks you to buy their Water Softener just because it has been used years ago, THINK OF THE SCYTHE.

REFINITE is the Last Thought in Water Softening, Right up to the Minute and Right Every Minute.

Send now for latest literature on this Modern Machine.

The

REFINITE

REGISTERED U.S. PATENT OFFICE
-TRADE MARK-

Company

Incorporated

DES MOINES, IOWA
U. S. A.

Eastern Representative:
A. W. Buhlmann,
200 Fifth Avenue,
New York City.

Western Representatives:
Larimer-Hughes Company
509 Baker-Detwiler Bldg.,
Los Angeles, Calif.

Southern Representative:
Edwin S. Myers,
904 Fourth Nat'l Bank Bldg.,
Atlanta, Georgia.

Graddick's Production Table No. 6

Production table for filling or hosiery yarn spinning, showing the pounds per day per spindle that can be produced on spinning machinery in Nos. and tenths of average Nos. from 32's to 70's at ten hours per day. Allowance has been made for all necessary stoppage, such as doffing, oiling, banding, cleaning, etc.

Yarn No.	Square Root No.	Twist per Inch	Front Roll Speed	Spindle Speed	Lbs. per day Per spindle	Lbs. per day Per spindle No. & 10th	Lbs. per day Per spindle No. & 20th	Lbs. per day Per spindle No. & 30th	Lbs. per day Per spindle No. & 40th	Lbs. per day Per spindle No. & 50th	Lbs. per day Per spindle No. & 60th	Lbs. per day Per spindle No. & 70th	Lbs. per day Per spindle No. & 80th	Lbs. per day Per spindle No. & 90th
32	5.65	18.82	133.6	7900	.237	.2362	.2354	.2346	.2338	.2330	.2322	.2314	.2306	.2298
33	5.74	18.99	132.2	7900	.229	.2282	.2274	.2266	.2258	.2250	.2242	.2234	.2226	.2218
34	5.83	19.16	130.8	7900	.221	.2202	.2194	.2186	.2178	.2170	.2162	.2154	.2146	.2138
35	5.91	19.33	129.4	7900	.213	.2122	.2114	.2106	.2098	.2090	.2082	.2074	.2066	.2058
36	6.00	19.50	128.1	7900	.205	.2043	.2036	.2029	.2022	.2015	.2008	.2001	.1994	.1987
37	6.08	19.75	126.8	7900	.198	.1973	.1966	.1959	.1952	.1945	.1938	.1931	.1924	.1917
38	6.16	20.00	125.5	7900	.191	.1903	.1896	.1889	.1882	.1875	.1868	.1861	.1854	.1847
39	6.24	20.25	124.2	7900	.184	.1833	.1826	.1819	.1812	.1805	.1798	.1791	.1784	.1777
40	6.32	20.50	122.9	7900	.177	.1764	.1758	.1752	.1746	.1740	.1734	.1728	.1722	.1716
41	6.40	20.75	121.6	7900	.171	.1704	.1698	.1692	.1686	.1680	.1674	.1668	.1662	.1656
42	6.48	21.00	120.3	7900	.165	.1645	.1640	.1635	.1630	.1625	.1620	.1615	.1610	.1605
43	6.55	21.25	119.0	7900	.160	.1595	.1590	.1585	.1580	.1575	.1570	.1565	.1560	.1555
44	6.63	21.50	117.7	7900	.155	.1545	.1540	.1535	.1530	.1525	.1520	.1515	.1510	.1505
45	6.70	21.75	116.4	7900	.150	.1496	.1492	.1488	.1484	.1480	.1476	.1472	.1468	.1464
46	6.78	22.00	115.1	7900	.146	.1456	.1452	.1448	.1444	.1440	.1436	.1432	.1428	.1424
47	6.85	22.25	113.8	7900	.142	.1416	.1412	.1408	.1404	.1400	.1396	.1392	.1388	.1384
48	6.92	22.50	112.5	7900	.138	.1376	.1372	.1368	.1364	.1360	.1356	.1352	.1348	.1344
49	7.00	22.75	111.2	7900	.134	.1336	.1332	.1328	.132'	.1320	.1316	.1312	.1308	.1304
50	7.07	23.00	109.9	7900	.130	.1296	.1292	.1288	.1284	.1280	.1276	.1272	.1268	.1264
51	7.14	23.19	108.6	7800	.126	.1256	.1252	.1248	.1244	.1240	.1236	.1232	.1228	.1224
52	7.21	23.38	107.3	7800	.122	.1216	.1212	.1208	.1204	.1200	.1196	.1192	.1188	.1184
53	7.28	23.57	106.0	7800	.118	.1177	.1174	.1171	.1168	.1165	.1162	.1159	.1156	.1153
54	7.34	23.76	104.7	7800	.115	.1147	.1144	.1141	.1138	.1135	.1132	.1129	.1126	.1123
55	7.41	23.95	103.4	7800	.112	.1117	.1114	.1111	.1108	.1105	.1102	.1099	.1096	.1093
56	7.48	24.14	102.6	7800	.109	.1087	.1084	.1081	.1078	.1075	.1072	.1069	.1066	.1063
57	7.54	24.33	101.8	7800	.106	.1057	.1054	.1051	.1048	.1045	.1042	.1039	.1036	.1033
58	7.61	24.52	101.0	7800	.103	.1027	.1024	.1021	.1018	.1015	.1012	.1009	.1006	.1003
59	7.68	24.71	100.2	7800	.100	.0998	.0996	.0994	.0992	.0990	.0988	.0986	.0984	.0982
60	7.74	24.90	99.4	7800	.098	.0978	.0976	.0974	.0972	.0970	.0968	.0966	.0964	.0962
61	7.81	25.09	98.7	7800	.096	.0958	.0956	.0954	.0952	.0950	.0948	.0946	.0944	.0942
62	7.87	25.28	98.0	7800	.094	.0938	.0936	.0934	.0932	.0930	.0928	.0926	.0924	.0922
63	7.93	25.47	97.3	7800	.092	.0918	.0916	.0914	.0912	.0910	.0908	.0906	.0904	.0902
64	8.00	25.66	96.6	7800	.090	.0898	.0896	.0894	.0892	.0890	.0888	.0886	.0884	.0882
65	8.06	25.85	95.9	7800	.088	.0878	.0876	.0874	.0872	.0870	.0868	.0866	.0864	.0862
66	8.12	26.04	95.2	7800	.086	.0858	.0856	.0854	.0852	.0850	.0848	.0846	.0844	.0842
67	8.18	26.23	94.5	7800	.084	.0838	.0836	.0834	.0832	.0830	.0828	.0826	.0824	.0822
68	8.24	26.42	93.8	7800	.082	.0818	.0816	.0814	.0812	.0810	.0808	.0806	.0804	.0802
69	8.30	26.61	93.1	7800	.080	.0798	.0796	.0794	.0792	.0790	.0788	.0786	.0784	.0782
70	8.36	26.80	92.4	7800	.078	.0778	.0776	.0774	.0772	.0770	.0768	.0766	.0764	.0762

To find the production of an average No. read to the intersection of the No. nearest to the 10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, or 90th.

KNITTING SECTION

The Attention of all Manufacturers of

WOMEN'S HOSE

is invited to our new

Fashioned Welt Machine MODEL K

This Machine produces women's hose with an inturned knitted welt similar to that produced on full fashioned machines. The machine has all the features of our other Models—each stocking being dropped from the machine complete, except for the looping of the toe. It is fitted with five yarn changing fingers, inserts an "anti-run-back" course, and the welt being knitted on the machine, has all the elasticity of the fabric and may be made as wide as desired.

Write for samples and further information

ESTABLISHED 1865

Scott & Williams

INCORPORATED

366 Broadway,
NEW YORK

MERCERIZED YARNS

Dyers—Bleachers—Gassers

Dyers of

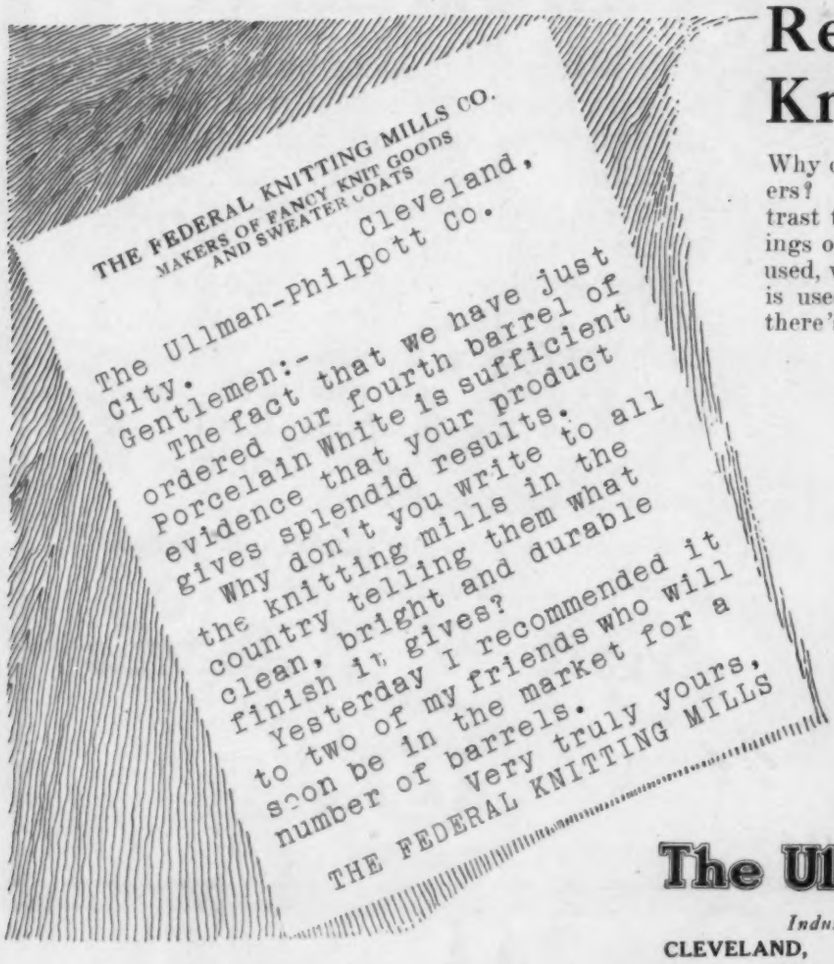
Colors Fast to SUN and BLEACHING

ABERFOYLE
Manufacturing Company

CHESTER, PA.

402 Morris Building
PHILADELPHIA

CHICAGO
746 Insurance Exchange


THE FEDERAL KNITTING MILLS CO.
MAKERS OF FANCY KNIT GOODS
AND SWEATER COATS
Cleveland,
The Ullman-Philpott Co.
City.
Gentlemen:-
The fact that we have just
ordered our fourth barrel of
Porcelain White is sufficient
evidence that your product
gives splendid results.
Why don't you write to all
the knitting mills in the
country telling them what
clean, bright and durable
finish it gives?
Yesterday I recommended it
to two of my friends who will
soon be in the market for a
number of barrels.
Very truly yours,
THE FEDERAL KNITTING MILLS

Read What This Knitting Mill Says

Why do we get letters like this from our customers? The reason will be clear if you will contrast the glistening, snow white walls and ceilings of a mill where Upco Porcelain Enamel is used, with another mill where another mill white is used. You will at once acknowledge that there's no better mill white than

Upco QUALITY

"Since 1881"

Upco Porcelain Enamel positively stays white longer than any other white made, and will retain its high gloss no matter how often washed. We are ready to stand a test alongside of any similar product made.

A post card addressed to us saying "Send me your book 'Light Without Power'," and you will receive a little book well worth looking over. Ask for it today.

The Ullman-Philpott Co.

Industrial Paint and Varnish Laboratories

CLEVELAND, : : : : : : : : : OHIO

Cost Accounting in the Knitting Mill

BY RALPH H. BUTZ.

A well known textile manufacturer recently made the statement that "it is only after the annual balance sheet has been made that the manufacturer can arrive at fairly exact conclusions regarding the cost of manufacture." When applied to this particular manufacturer the statement is true, because he has not adopted the methods that would keep him informed daily instead of once a year.

In the mill where an adequate cost system is maintained there is no need of guessing what the costs are; the actual figures can be had at any time. The department of administration can make definite plans for the future instead of groping about in the dark. And yet a large number of manufacturers are blind to these facts. They do not seem to realize that good business policy demands that the manufacturer should know just how much profit he is making on each variety of goods that he produces. It would be just as logical for the retailer to sell his merchandise "hit or miss" without any thought of profit.

Some manufacturers say "we make our estimates of manufacturing cost before we make a selling price." Every manufacturer does that, but where no actual cost figures have ever been available, what basis can there be for estimates. Estimates can not always be relied upon. They should be verified by actual figures. The average estimate is a matter of judgment, and the man who has the best judgment is apparently the most accurate.

The lack of costing systems in mills has been responsible for the price cutting evil. When times have been dull the manufacturer has shaded his prices a little bit lower than his competitors, trusting that things would come out right in the end, and all this has been done without a proper knowledge of actual cost.

There was a time when cost accounting was unknown, and in those days it was not needed. Raw material and labor were low in cost and the manufactured product commanded a good price, insuring substantial profits. There was no need to worry because there was sure to be a profit. But the conditions have changed. Raw material and labor are commanding prices heretofore unknown, but the price of the finished product has not advanced proportionately. New processes, new inventions, greater competition; all these have played a prominent part. The profit per unit has decreased until the wide awake executive has realized that continued prosperity must be purchased at the price of increased efficiency.

The subject of cost accounting is receiving particular attention on the part of the leading trade organizations, and it has been demonstrated that the manufacturer who maintains a costing system can also maintain a more efficient plant.

Cost accounting is not only for the large plant as many men seem to imagine. It is for the smaller producer as well, and it is he who needs it most. For this reason I will try to present the fundamental principles of cost accounting in such a manner that it can be adopted by the manufacturer who does not desire to employ an expert accountant to install and maintain such records. The technical treatment of the subject is avoided in order to make the explanation as clear and concise as possible.

STORES RECORD

Article Description

RECEIVED				WITHDRAWN					BALANCE	
Date	Quantity Received	Price	Value	Date	Req. No.	Quantity Issued	Price	Value	Quantity	Value
1-2	2000	.40	800.00						2000	800.00
				1-2	186	50	.40	20.00	1950	780.00
				1-3	189	300	.40	120.00	1650	660.00
				1-4	192	410	.40	164.00	1240	496.00
1-4	3000	.40	1200.00						4240	1696.00
				1-5	198	700	.40	280.00	3540	1416.00

FIG. 1. MATERIAL OR STORES RECORD.

The cost of a knitted product is made up of three distinct elements. These are Materials, Labor and Manufacturing Expense. Material is the first element in manufacturing process and is therefore treated first. In the knitting mill material consists of yarn and supplies.

When the manufacturer receives an order for a certain quantity of his product the first step is to ascertain the quantity of yarn required to complete the order. He will then make his purchases of yarn. When this yarn is received at the mill a record is made of the grade and quantity as soon as it is placed in the store room where the material and supplies are kept before they enter into the process of manufacture. When yarn is withdrawn from the store room for the machines such withdrawals are also entered on this record. This record is usually called Material Record or Stores Record and is a perpetual inventory of all the materials in stores. A form of such a record is illustrated in Fig. 1.

ALWAYS FIRST WITH THE LATEST

BANNER

ALWAYS FIRST WITH THE LATEST

Full Automatic

Hosiery Machines

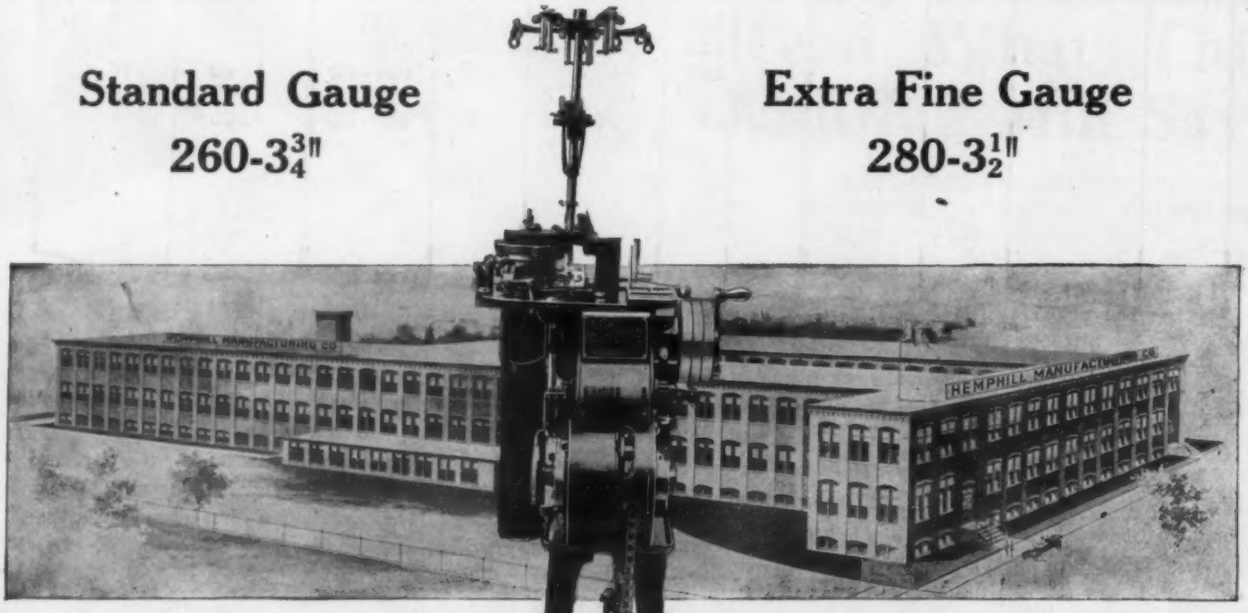
More than 29,000 in Successful Operation

These new machines have made possible the success of new lines of extra fine gauge hose and half hose.

Many leading mills of the country are now largely equipped with these new machines, and their absolutely successful operation has been demonstrated.

Standard Gauge
260-$3\frac{3}{4}$"

Extra Fine Gauge
**280-$3\frac{1}{2}$"



All parts easily accessible from front of machine.

Write for particulars and samples of work.

Hemphill Mfg. Co.,

PAWTUCKET, RHODE ISLAND

NEW YORK OFFICE 350 BROADWAY

REQUISITION No._____

Deliver to the bearer the following for Job No._____

Quantity	Material	Price	Value
		_____ Foreman	

FIG. 2. A REQUISITION FORM.

The following explanation will be sufficient to give a working knowledge of this form:

Jan. 2—On this date 2000 pounds of cotton yarn, at 40 cents a pound, were received at the mill and placed in the store room. On the record form this quantity and value is entered under the heading RECEIVED. The quantity, 2000 pounds, and the value, $800.00, is then entered in the column at the right under the heading BALANCE. This column at all times shows the quantity and value of the yarn in the store room, which is in reality a complete inventory.

Jan. 2—Requisition No. 186 was issued to the storekeeper for 50 pounds of yarn. The storekeeper enters this requisition on the record sheet under the heading WITHDRAWN, and then deducts the pounds and the value from the balances previously shown in the BALANCE column. A requisition form is illustrated in Fig. 2.

The other entries on the Stores Record are repetitions to give a working size illustration. When more than one kind of yarn is kept in the store room a separate record sheet should be kept in the record book for each grade of yarn. When different grades of yarn are entered on one sheet there are more possibilities for errors to occur, and it is also more difficult to ascertain the quantity of each grade on hand.

This record will always be correct if care is exercised by the clerk who makes the entries. When a complete inventory is desired all that is necessary is to add the balances shown on the various record sheets. The loose leaf system is the most practical for this work because sheets can be added at any time where they are required in the book, which is not possible when a bound record book is used. Most stationers have sheets in stock which are suitably ruled for this purpose.

In considering the purchase of yarn received on Jan. 2 as shown on the stock record we have the following entry of the transaction.

Dr. Material in Stores.....$800.00
Cr. Cash or Liability Account.... $800.00

This yarn is charged to the Material account in the ledger, or where a number of subdivisions of this account are kept, to the Yarn account. If the purchase was paid for in cash, the Cash account would be credited. If the purchase was made on time the firm from whom the purchase was made would be credited. This completes the ledger entries for the transaction.

Another important feature is that the Material account in the ledger acts as a control over the Store Record kept by the storekeeper. Material account shows a charge of $800, and the record book also shows that yarn to that value is in stock. When properly kept the Material account and the stock record must always be in agreement.

When material is withdrawn from the Storeroom by requisition the stock record shows a reduction in quantity and value. Requisition No. 186 entered on the record form illustrated may be taken as an example. After this requisition was filled and the entry made by the storekeeper the value of yarn on hand was only $180.00. It now becomes necessary to make an entry for this requisition in order that the Material account may be in agreement with the store record. This entry should be

Dr. Material in Process $20.00
Cr. Material in Stores $20.00

As soon as the material leaves the store room and is put into process it must be charged to the Material in Process account, giving the Material in Stores account a corresponding credit. The Material in Process account will at all times show the value of material in the mill which has not yet reached the point of being a finished product.

It is not enough to charge yarns to the Material in Process account when such yarns are withdrawn from the storeroom. In such a manner it would not be possible to know the cost of producing each separate order, because all the material used on a number of different orders are charged to this one account. To segregate and analyze the transactions in this one account would give rise to many errors and would be impracticable.

For instance, in a certain mill there may be in process of manufacture 15 or 20 different grades of material, and each grade will be sold at a different price. It is easily apparent that there must be maintained a separate record for each of these grades. On such a record should be shown the quantity of finished material which is to be produced, the order or job number, and the name and quality of the article. This will form the heading of the sheet, commonly known as a Cost Sheet, Fig. 3. At the end of each day all the requisitions that were issued during the day will be summarized by the cost clerk, giving the total value of material issued for each job. These sheets are kept in a book known as the Cost Book or Cost Ledger. The entries for material placed in process are made daily. As soon as

WILLCOX & GIBBS HIGH SPEED LOCKSTITCH Sewing Machine

EVERYWHERE this TRADEMARK is a Recognized Guarantee of Perfect Sewing Mechanism

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

Registered U. S. Patent Office

An Investment----Not an Expense

Our proved claims for this machine are:

Lowest Maintenance Cost
Highest Sustained Speed
Largest Production
Perfect Stitches
Least Vibration
Quietness in Operation

Indispensable to manufacturers of

Sheets
Pillow Cases
Towels
Napkins
Shirts
Pajamas
Wrappers
Muslin Underwear
Tucking

3500 to 4000 Perfect Stitches per Minute
Where Factory Conditions Permit.

The Willcox & Gibbs High-Speed Lockstitch Machine shows marvelous advance in the art. Its many novel and valuable features combine to produce high speed, light running, quietness, ease of working, great durability and consequent low cost of maintenance, with maximum production, and lower labor cost.

WILLCOX & GIBBS SEWING MACHINE CO.

Trade Mark

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

Reg. U. S. Pat. Off.

HOME OFFICE:
658 BROADWAY
Corner Bond Street
NEW YORK

European Representative: Willcox & Gibbs Sewing Machine Co., Ltd., London, Eng.
Canadian Representative: W. J. Westaway, 5 Sun Life Bldg., Hamilton, Ontario.

Trade Mark

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

Reg. U. S. Pat. Off.

Order No._____ COST SHEET No._____.

Article_____ Quality_____ Sizes_____ Quantity_____

Job No._____ Date Commenced_____ Date Completed_____

MATERIAL				DIRECT LABOR			MANUFACTURING EXPENSE		
Date	Req No.	Quantity	Value	Date	Wage Sheet	Amount	Date	Journal Folio	Amount

FIG. 3. THE COST SHEET.

a job is completed the Cost Sheet will show the exact amount and value of the material used to complete the order. The form of this cost sheet can be designed by the individual manufacturer to meet his particular needs. A convenient form is illustrated herewith.

The Material in Process account in the general ledger will be the controlling account over the Material columns in the Cost Ledger. All materials charged to the Material in Process account in the general ledger will also be charged to the material account of some job or jobs in the cost ledger, and therefore the total quantity of material shown in the cost ledger must agree with the total debit shown in the Material in Process account.

It is possible to maintain the cost ledger independently and without reference to the general ledger, but under such a system errors occur much more frequently than when the cost accounting system is under the direct control of the fiscal accounting system. Errors are soon detected when the cost accounts are not in agreement with the general accounts. Such is not the case, however, when the cost books are kept independently, because there is nothing to show that errors have occurred, and they will therefore pass unnoticed.

We have now considered the various entries required for material to the time before it emerges in the shape of finished product. When the job is completed it is evident that the material is no longer in process. The material is then Finished Goods, and in order to keep the Material in Process account accurate it becomes necessary to make a set of entries for this purpose. The entry for the general ledger would be

Dr. Finished Goods in Stock
Cr. Material in Process.

Of course, the value of the material in process is not as great as the value of the finished goods, there being two other credits still to be made before the credits equal the debits. But at the present time we are concerned with material only, and for illustrative purposes will assume that the debit shown equals the credit.

The entry for the Cost Ledger would appear as follows:

JOURNAL						
Cost Ledger	General Ledger	Folio		Folio	General Ledger	Cost Ledger
	1000		Dr. Material in Process Cr. Material in Stores		1000	
1000			Dr. Job No. xxxx Cr. Material in Process			1000
	1000		Dr. Finished Product in Stock Cr. Material in Process		1000	
1000			Dr. Material in Process Cr. Job No. xxxx			1000

FIG. 4. A COMBINATION JOURNAL.

Circular Rib Knitting Machinery

PRODUCTS

Underwear, Sweaters, Cuffs with Cut Welt, Selvage, or French Welt, Mantles, Collarettes, Toques, Golf Caps, Hosiery Tops, Skirts, Borders, Corset Covers, Button Stays, Mittens, Bandages.

FEATURES

Rectangular Slots, Hardened at Bottom, Sectional Caps and Cam Rings, Hardened and Ground surfaces, Sensitive Take-Ups, Two Speed Drive, Dogless Attachment, Positive Pattern Mechanism, Needle Guard and Protector, Automatic Stop Motions, Electric Cloth Cutters.

Characteristics

The characteristics of a knitting machine, like those of an individual, are determined by its origin and history; just as knowledge of the individual's family, schooling, and early life are desirable for the formation of an idea of his characteristics, so knowledge of the plant, personnel and ideals involved in the construction of the knitting machine are necessary for an understanding of its merits. Investigate the origin of our knitting machinery.

Wildman Mfg. Co.

ESTABLISHED 1889 **NORRISTOWN, PENN.**

Dr. Material in Process
Cr. Job. No.

This entry will close the cost sheet for Job No. xxxx and will also charge the Material in Process account in the cost ledger for the amount of material which is no longer in process. After these entries are posted to the proper accounts in both ledgers the accounts will be in agreement, and the general ledger will show the value of finished goods in stock, which will not appear in the cost ledger because the cost accounting system has no further concern with material after it has shown the cost of production.

Some bookkeepers think it is necessary to keep two journals, one for the cost ledger entries and the other for the general ledger entries. This is not necessary. The same thing can be accomplished by using a combination journal for both ledgers. Such a form is shown here, and entries have been made, for illustration, to cover the movement of material from the time it leaves the store room until it is placed in the stock room in the shape of finished goods. Amounts have been assumed in order that a better and clearer idea may be had.

An important feature of the cost ledger is that a complete inventory can at any time be taken with very little trouble and in a short time. By adding the total of the Material in Process account to the total of the Material in Stores account and the Finished Goods in Stock account, the manufacturer will have an accurate inventory of material. This feature alone is of such importance that it makes the cost accounting system of inestimable benefit.

The Knit Goods Market.

Knit goods for spring in almost greater demand than in the recollection of the seniors in the trade, and buying for fall somewhat curbed, probably expresses in a few words the market situation.

The scarcity of spring stuff is made apparent in the pressure upon mills for deliveries, with a number of suits in the courts to recover damages for non-delivery threatened or under way. In several instances manufacturers are being besieged for fulfillment of contract made with the business predecessors of merchants, although the successors have no claim whatever upon mills having had contracts with concerns which have gone out of business.

Buying for fall has been somewhat checked in the last five or six weeks, notably in hosiery lines, due in all probability to new war issues that have developed and their apparent effect on cotton. It was a mistake to go into the market early in January with fall lines. Buyers were not ready, and will not be in the market perhaps for a week or two. About the middle of March there should be an influx sufficient to inject new life into the market and spread a more cheerful feeling among mills.

A letter, somewhat amazing to a majority of hosiery manufacturers was sent out under date February 1 to jobbers, recommending caution and suggesting that purchases of half hose be withheld for several weeks. The letter is on the heading of a well known southern mill and a copy of it is supplied by a New York jobber, who says he is in accord with the views of the mill. Following are extracts from the letter, which is being carefully treasured by those who received copies:

"The present condition of the hosiery market is exceedly alarming. Your interests and our interests are mutual. It looks like both of us might get very badly burnt, and lose the profits of the last two years, unless we are very careful.

"It seems utterly impossible that yarns can go higher than they now are. If prices take a tumble we will be caught with a lot of high priced yarns and you with high priced merchandise. The only way we know to face the situation is to go slow.

"There seems to be a weakening in both the cotton and yarn markets, especially noticeable in mercerized yarns. By waiting until the middle of next month we know that we can buy yarns at a figure at which we can make you a proposition where you can get your half hose at a much lower cost than at present. We advise you to wait until then."

Doubtless the letter quoted has induced a number of jobbers to defer their fall purchases, but even they would prefer that the letter do not fall into the hands of retail merchants, lest the effect be to curtail buying for immediate wants. On the other hand, there are merchants who refuse to be influenced by the letter. They look for continued high prices, regardless of the outcome of the new war questions, and ask, "What will the mill do for us if we wait until the middle of next month and in the meantime cotton and yarn prices take a jump? The mill is not guaranteeing better prices than those of today."

The disposition is to safeguard against being caught short, for, while the cotton bears have been having their inning, it seems to be the common opinion that yarns cannot show any great decline unless there be a material drop in cotton, and higher prices are looked for by large interests.

Several manufacturers became excited a week or two ago over a yarn quotation fully three cents a pound under the price that practically all spinners were getting. There was an instant demand for the name of the parties offering yarn at the low quotation which had crept into the columns of a trade publication. They could not be located, and the incident is not known to have affected prices. It served to show, however, that there are manufacturers ready to take on yarn at a drop of two or three cents a pound. The spinners know this, say yarn houses, and do not intend to shade prices to accommodate these manufacturers, who eventually must come into the market, regardless of what they may have to pay.

Cotton, as is shown, should receive strong support from wool and silk. All wool and worsted yarns are high and the tendency is still upward. Woolen yarns are relatively higher than worsted, due to the scacity of noils. Artificial silk made a new price record about the middle of February, when a quality, 150 denieres, was bringing $3.75 in jobbers' hands. This may have been due to the strike at the Viscose Company's plant at Marcus Hook, and it was to be expected that settlement of the trouble would be followed by a return to near normal prices—about $3.30 to $3.35.

While cotton ought logically to remain high while wool is on the advance, it is pointed out by wool interests that cotton is subject to speculative influences, whereas, the price of wool is controlled in the main by supply and demand.

STAFFORD & HOLT

Builders of
CIRCULAR
Rib Knitting Machinery

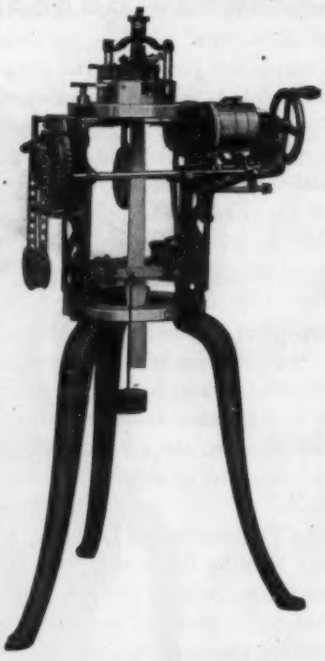
For Knitting the Latest Style Fabrics
FOR
Jackets, Borders, Etc.
Underwear, Sweaters,
Toques, Cardigan
Also Builders of
Napping Machines

The Stafford and Holt Pineapple Stitch Machine is the Latest.

Write for Descriptive Circular.

Little Falls, New York

H. BRINTON CO.



Builders of
Circular Knitting Machinery
of every kind for every purpose

Hosiery Ribbers
with the very latest attachments

Full Automatic Hosiery Footers

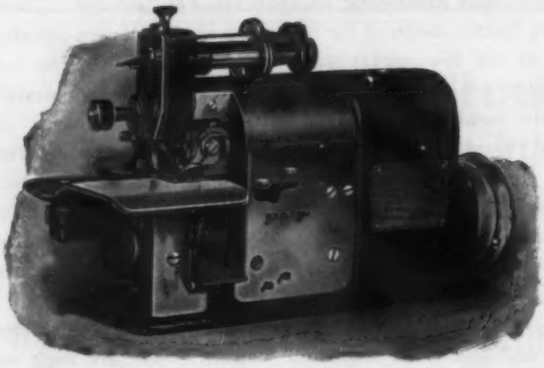
Body Machines Sleevers, Etc.
for Underwear, Sweaters, Toques, etc.

Write for Catalog, Prices and Samples.

213-217 Race Street, PHILADELPHIA, PA.
Canadian Agent: Hartley Kay, Ltd., Georgetown, Ont.

THE MERROW

High Speed Overseaming, Overedging and Shell Stitch Machines

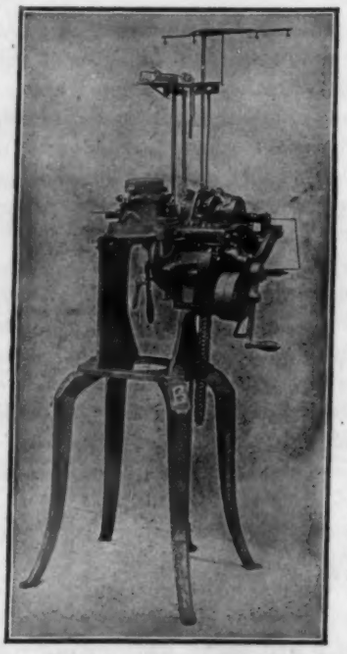


Our Class 60 Machines
For Trimming and Overseaming in one operation produce the strongest seams with the greatest economy.
USE STYLE 60S for welting Stockings, blind stitch.
USE STYLE 60HD for hemming bottoms of Underwear.
USE STYLE 17B or 22 for Bed Blankets.
STYLE 18 is for Horse Blankets.

SEND FOR SAMPLES AND CATALOGUE

THE MERROW MACHINE CO.
28 Laurel Street, HARTFORD, CONN.
467 Broadway, New York, 815 W. Van Buren St., Chicago
Knickerbocker Bld'g, 6th and Arch Sts., Philadelphia, Pa.
1019 E. Baltimore St., Baltimore, Md.

BOSS FULL AUTOMATIC KNITTER



It will make the neatest, most uniform and most perfect work, and is the most profitable of any knitter on the market.

It has the simplest Automatic Splicer in the world and never causes trouble. All parts are interchangeable. Compact and strongly built. Runs easily and breaks very few needles, seldom if ever requiring repairs.

So simple that an unskilled operator can learn to run it in a day.

The Boss Knitter means more production for the money than any other machine. Investigate.

Send for Particulars

BOSS KNITTING MACHINE WORKS
Cor. Elm and Reed Sts. READING, PA.

The possibility of further preparations for war has brought to the field a new crop of "brokers," who are out for samples of hosiery and underwear for government uses. After the experiences of mills with this class of self-constituted agents following the outbreak of the European war, it seems unlikely they will receive much attention.

Executives of several hosiery and underwear mills who have been interviewed on the subject declare that war orders would have the right of way in their mills, whether civilians got merchandise or not. One mill man says: "If the government asks for bids we will bid so low that it will be impossible for speculators to get under, except at a loss."

It is believed that, war or no war, the government will want clothing equipment for a large army, determined not to be forced to buy in the open market, as was the case when troops were poured into Mexico and the border sections. In any event, the possibility of a call for knit goods for army uses is being urged by many manufacturers and merchants as supplying good ground for paying no attention to any temporary lull or taking fright at the appearance of a mill executive's letter advising the trade to "go slow" in anticipation of a market decline.

While giving consideration to the law of supply and demand it must be borne in mind that much knitting machinery is idle because of lack of help, to say nothing of the scarcity of needles. The labor situation is tense particularly in the East and throughout Pennsylvania mills. In three mills visited several days ago approximately 20 per cent of the knitting machinery was idle for the reason that operatives could not be procured, and a proportionate shortage no doubt prevails generally.

When the number of idle machines is considered, it becomes apparent, knit goods interests say, that it is going to be no easy matter to supply all of the merchandise that will be wanted, and that, therefore, it would be ridiculous to show any price weakening for hastening buying that must come, soon or late.

Mills in Philadelphia suffering from lack of help have less difficulty than those in the villages and small towns. In the latter practically everyone is employed, and the limit therefor has been reached, while in Philadelphia help can be gotten if the employer is willing to pay the wage.

The situation threatens to become worse if, as has been stated, the government intends to employ women in the munitions factories more extensively than heretofore, which is advanced as another reason for figuring on higher costs when offering knit goods for Fall.

Prices quoted by hosiery mill agents denote no recession in hosiery. Former 25 cent numbers of mercerized half hose are going to jobbers at $2 to $2.10 and are considered reasonably priced. While 84 needle clean yarn socks sold within a week or two at 87½ cents, a mill has advised its representatives that the price for March, April and May delivery is $1.15, for 2 pound. "We have nothing to sell at less," the mill writes.

Ladies mercerized 220 needle goods are being taken, it is stated, at $2.35 to $2.40 net, while 240 needle from 70's 2-ply yarn fetch from $2.50 to $2.60. It is noted that a line of ladies hose from carded yarn is bringing from $1.30 to $1.40 against a former price of 90 cents for combed yarn. Eighty cents is the approximate price on 144 needle half hose, 1 pound 8 ounces, sewed toe, seamless commanding about five cents better.

The statement is made in both manufacturing and jobbing circles that well known brands of hosiery are meeting with the least resistance, that notwithstanding bear influences, these lines are being eagerly taken. As a matter of fact, buying as an all around proposition is on a basis far above normal and is restricted only in contrast with the feverish conditions of several months ago.

The several interests would welcome lower prices, for, it is reasoned, if the present high level be maintained, there is going to be a retrenchment among consumers, who up to this time have not felt the real pinch. Goods going over the retail counter now were made up from low price yarns. Goods being made now must go over the counter at enormous advances. The jolt from high prices is yet to come. Realization of this has caused an easing up in the primary markets, no doubt, but it follows that any curtailment of production at this time would be but the forerunner of a shortage of merchandise later on, unless everything goes to smash.

Calculations for Knitted Fabrics.

BY WILLIAM DAVIS, M. A.

In our last article a series of formulae were devised from first principles dealing with the various factors envolved in a knitted cloth, and several concrete examples of the formula for weight were given in demonstration. To illustrate the scope of the series in other directions are given herewith other examples of their use. The formulae 1, 2 and 3 are as follows:

$$(1)\quad \frac{\text{Length} \times \text{Courses} \times \text{Width} \times \text{Take-up}}{\text{Number} \times \text{Basis}} = \text{Weight}$$

$$(2)\quad \frac{\text{Length} \times \text{Courses} \times \text{Width} \times \text{Take-up}}{\text{Weight} \times \text{Basis}} = \text{Counts}$$

$$(3)\quad \frac{\text{Weight} \times \text{Number} \times \text{Basis}}{\text{Courses} \times \text{Width} \times \text{Take-up}} = \text{Length.}$$

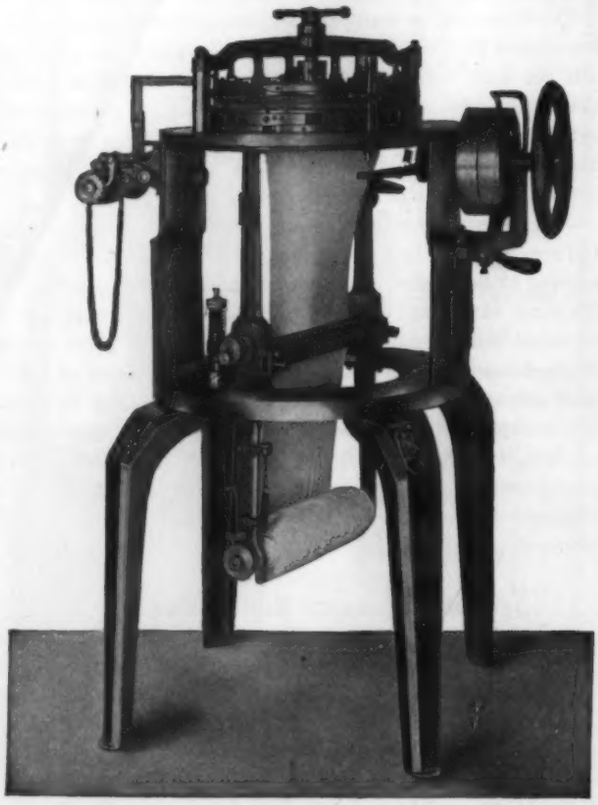
Example 1. Calculate the yarn counts of a fabric knitted with 20 courses per inch, take-up of 2.2, length 64 yards, weight 15 lbs., width 50 inches.

Answer in cotton counts:

$$\frac{64 \times 20 \times 50 \times 2.2}{15 \times 840} = 11.2 \text{ counts in cotton.}$$

Example 2. Calculate the counts of a knitted fabric which weighs 5.4 ozs. per yard, 54 inches wide, 32 courses per inch, with a take-up of 2.75.

$$\frac{1 \times 32 \times 54 \times 2.75}{(5.4 \div 16) \times 560} = 25.1 \text{ worsted counts.}$$



NYE & TREDICK CO.

MANUFACTURERS OF

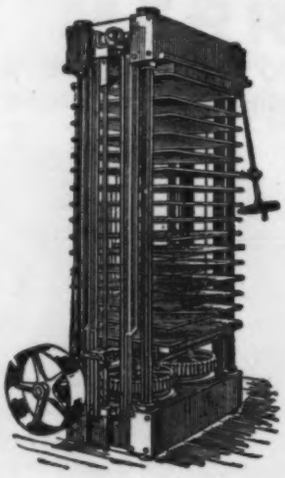
Circular Rib

Knitting Machinery

FOR

Underwear and Hosiery

OFFICE AND SHOW ROOMS
718-720 Cherry St.
PHILADELPHIA, PA.



RELIANCE

Hot Plate Screw Press

FOR

Hosiery and Underwear

Write for Catalog and Prices

Reliance Machine Works,
FRANKFORD, PHILA.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 BOSTON AVE KENSINGTON PHILA.

General Machine Works

YORK, PA.

Manufacturers of

Circular Rib Knitting Machinery

Cylinders and Dials. Special machinery of all descriptions

We Specialize

Repair parts given immediate attention.

Note: The ounces must be divided by 16 to bring them to pounds before the formula can be operated.

Example 3. Figure the counts of 200 yards of webbing, 36 inches wide, 18 courses per inch, 80 lbs. weight, take-up 2½. (Answer in the woolen skein system which is yards per dram or = number of hank lengths of 256 yards in a pound.

$$\frac{200 \times 18 \times 36 \times 5}{80 \times 256 \times 2} = 15.8 \text{ skeins counts.}$$

For the American woolen trade, it might be useful to have this result in the Run system, the basis of which is the number of cuts or hanks of 100 yards each in one ounce. 15.8 times 256 = the yards in 16 ounces.

$$\frac{15.8 \times 256}{16} = \text{yards in 1 ounce.}$$

But the American run is the yards per ounce divided into 100 yard hanks, thus:

$$\frac{15.8 \times 256}{16 \times 100} = 2.53 \text{ Run (American).}$$

One of the most common occurrences in a knitting factory is the variation of weight in a given length of webbing, this variation making it very difficult for the manufacturer to deliver the garments exactly to sample. Formula 2 may sometimes be useful in locating the cause of the variation. The machine overseer is often blamed for not setting his machine properly but the cause may be a variation in the size of the yarn delivered by the spinner.

Example 4. A length of 72 yards of webbing made from 2/24's worsted is given, 21 courses per inch, 40 inches wide, take-up 2. If all particulars are correct the weight of this length should be 18 pounds, but on weighing it is found to be only 15 pounds. Assuming that the counts of the yarn is at fault, find the size of thread actually employed.

Using formula 2 with 15 pounds as the weight we have:

$$\frac{72 \times 21 \times 40 \times 2}{15 \times 560} = 14\ 2/5 \text{ worsted counts.}$$

That is, in place of using a yarn equivalent to 12½ counts, a number 14 2/5 must have been employed to give the reduced weight mentioned.

Find the counts employed if the weight is found to be 22 lbs.

$$\frac{72 \times 21 \times 40 \times 2}{22 \times 560} = 9\ 9/11 \text{ worsted counts.}$$

A consideration of these examples will make clear to the manufacturer that they present very useful suggestions as to further adaptability. It happens often that he has to make fabrics and garments to a given weight and by this means he is able to ascertain exactly what weight will be given by the various counts in his yarn store. When the fabric is made up of several sizes or counts of yarn, the problem is rather more difficult because the result obtained must only give an average counts.

Example 5. A fabric made from 12's worsted, 72 yards long, 21 courses per inch, 40 inches wide, take-up 2, weighs 18 pounds. It is required to cheapen it by using one third of the weight in cotton, find the two counts which will preserve the same texture of fabric.

Of the total 18 lbs., one third = 6 lbs. is cotton, whilst the remaining 12 lbs. is worsted. We require to make two calculations, using in the first case the worsted hank number and in the second the cotton. Thus for the worsted counts we have:

$$\frac{72 \times 21 \times 40 \times 2}{12 \times 560} = 18\text{'s worsted.}$$

and for the cotton we have:

$$\frac{72 \times 21 \times 40 \times 2}{6 \times 840} = 24\text{'s cotton counts.}$$

Find the two counts if the manufacturer desires to introduce a silk face in two-fold silk yarn equivalent to one sixth of the total weight of the fabric given for 12's worsted. Worsted weight required = 15 lbs. Weight of spun silk = 3 lbs.

$$\frac{72 \times 21 \times 40 \times 2}{15 \times 560} = 14\ 2/5 \text{ worsted counts.}$$

$$\frac{72 \times 21 \times 40 \times 2}{3 \times 840} = 48 \text{ silk or } 48/2 \text{ counts.}$$

These calculations do not say anything about a variation of the number of courses per inch in the various counts, these mentioned being for plated goods where the one yarn is slipped on the back of the other. In the last few examples we have used the same particulars frequently, the only variation being the hank number 560 to 840 or the weight. In a factory it often happens that there are well known standard cloths of this kind which have always formed a staple branch of the trade of the firm and when such is the case it is well to devise means of shortening the calculation somewhat. The favorite way of curtailing a calculation is to devise what are sometimes called "gauge-points" or "constants." It often happens that some member of a firm's staff performs problems with apparently lightening speed which surprises everybody and gives him the impression of being a remarkable fellow, an impression which naturally he does not wish to disperse by giving away the secrets of his mysterious processes. To obtain such and such a result he states that he multiplies by 4.36 and divides by 2.14 and that is the end of it. Now very little investigation will likely prove that he is using what is

known as one of the gauge-points, that is in a formula which he is obliged to use continually with the same or very similar particulars, he adopts an abridgement. To illustrate the method let us use the particulars given in the examples 4 and 5 for worsted yarns. In all the calculations for worsted counts we have the numbers appearing as follows:

$$\frac{72 \times 21 \times 40 \times 2}{560}$$

Canceling this out in the ordinary way we obtain 216, which may be termed the gauge point for all calculations in worsted for this cloth. If the number 840 be substituted for 560 a gauge point will be obtained for all calculations envolving cotton counts thus:

$$\frac{72 \times 21 \times 40 \times 2}{840} = 144 \text{ constant.}$$

If it were desired to make out a range of plated fabrics with the corresponding counts it would be possible to do so as follows: Let the total weight of the standard cloth be 18 pounds, and if two counts are employed, the weight of the one is 4 lbs., whilst the remaining 14 lbs. is of a second counts. The constant for the cotton counts is 144 and to obtain the first counts we divide by 4 thus: 144 ÷ 4 = 36s cotton counts. For the second counts we divide thus: 144 ÷ 14 = 10.3 cotton counts. If we wish a similar result in the worsted counts we use the constant 216, thus for the first count 216 ÷ 47 = 54's worsted counts. 216 ÷ 14 = 15.4 worsted. Using one or the other of these gauge points or constants it should be possible in a very short time to make out a list of all counts which correspond to different weights in this standard cloth. Taking the constant 144 for the cotton counts the following will be the counts corresponding to the various weights. Supposing that the standard cloth weight be made to rise by two pound stages from 6 to 24 pounds, the following table can be devised for cotton yarns:

COTTON SYSTEM.

6 lbs.	= 144	divided by	6	= 24s	counts.
8 lbs.	= 144	"	8	= 18s	"
10 lbs.	= 144	"	10	= 14.4	"
12 lbs.	= 144	"	12	= 12	"
14 lbs.	= 144	"	14	= 10.3	"
16 lbs.	= 144	"	16	= 9	"
18 lbs.	= 144	"	18	= 8	"
20 lbs.	= 144	"	20	= 7.2	"
22 lbs.	= 144	"	22	= 6.5	"
24 lbs.	= 144	"	24	= 6	"

In this way a table of all possible counts and weights can be made out for any cloth which is a standard in the trade of a knit-goods factory. Of course this table does not guarantee that it would be physically possible to produce any cloth in the table, as for example in the 6's counts it would likely be impossible to insert 21 courses per inch into the fabric, but it is the concern of the overseer to make certain that the table or any table is used with discretion and with a full knowledge of practical possibilities from the point of view of fabric structure. Let us make out a table for the worsted gauge number from 1 to 10 lbs. and demonstrate how it may be used to devise various forms of plated fabrics:

WORSTED SYSTEM.

216	divided by	1 lbs.	= 216 counts.
216	divided by	2 lbs.	= 108 counts.
216	divided by	3 lbs.	= 72 counts.
216	divided by	4 lbs.	= 54 counts.
216	divided by	5 lbs.	= 43.2 counts.
216	divided by	6 lbs.	= 36 counts.
216	divided by	7 lbs.	= 30.8 counts.
216	divided by	8 lbs.	= 27 counts.
216	divided by	9 lbs.	= 24 counts.
216	divided by	10 lbs.	= 21.6 counts.

Thus for the standard example given, a three pound fabric would entail the use of 72's worsted counts and a weight of 6 lbs. would represent a counts of 36's worsted. For plating suppose the total weight of a cloth was 6 lbs., this could be obtained in various ways from the table given. The total weight could be made up as follows: 5 and 1, 4 and 2, 3 and 3.

For 5 and 1 the corresponding counts are 43.2 and 216's worsted. For 4 and 2 the counts are 54's and 108's counts. For 3 and 3 two threads of 72's would be employed. By introducing half pounds another series could be devised in a similar manner.

For a total weight of 9 lbs. the combinations are:

WORSTED SYSTEM.

8 lbs. with 1 lb. = 27's count with 216s count.
7 lbs. with 2 lb. = 30.8 count with 108s count.
6 lbs. with 3 lb. = 36 count with 72s count.
5 lbs. with 4 lb. = 43.2 count with 54s count.

Sufficient examples have been given to demonstrate the great general usefulness of the constant as a means of saving time and to insure accuracy. The possession of such tables for a range of standard fabrics should further prove a fruitful source of suggestion of new plating combinations which might otherwise never occur to the mind.

Among the Knitting Mills.

It was reported in these columns last month that the Marshal Field Co., had acquired 2000 acres of land and were to build a model manufacturing town at Koehler, Henry County, Va. It now develops that this property when completed, will be utilized in the manufacture of mercerized products.

A hosiery mill is to be erected at Anderson, S. C., by the Hetrick Mills of Walhalla, S. C., the Anderson mill being a branch of the mill at Walhalla. This mill will contain 60 knitting machines and be driven by electricity.

As a growing evidence of the cooperation in the knit goods trade, there was a meeting held recently at Arkwright Club, New York, by a number of knitting mill agents to consider the formation of an organization for the purpose of eliminateing some of the objectionable features of the

The Tape Drive

Our tapes are endorsed by machinery experts. They know their quality and they know their scientific structure. Exhaustive trials by practically all machinery makers have demonstrated that they have no superior. Write us.

Barber Mfg. Co., Lowell, Mass.

Spinning Tape Specialists

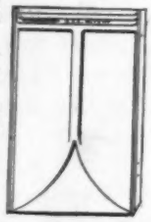
Specify **CORTRIGHT** Metal Shingles

for community houses—or factory and your roofing troubles and expenses are ended.

CORTRIGHT Metal Shingles stand up against the severest onslaughts of the elements—do not crack like slate or split, curl or burn like wood shingles.

CORTRIGHT Metal Shingles are an assurance against the hazards of neighboring conflagrations. They are fire-proof.

Ask us for a valuable book on roofing that shows CORTRIGHT Shingles on all kinds of buildings.



CORTRIGHT METAL ROOFING CO.
Philadelphia and Chicago

JOHN D. LEWIS

Manufacturer of

Logwood Extracts & Hematine

Providence, R. I.

50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES have been added to the "1912" Cloth Cutting, Folding and Winding Machine which **add at least 50 per cent to its value to YOU.**

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to more and greater profits.

THE ENORMOUS SAVINGS WILL INTEREST YOU.

Mail a card for complete information and prices.

When in need of special machinery, write us.

J. A. FIRSCHING, 614 Broad St., Utica, N. Y., U. S. A., Dept. "C"

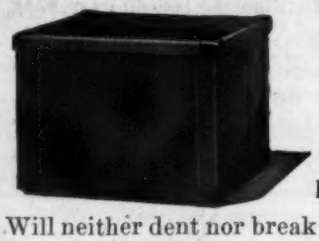
AMERICAN TEXTILE BANDING COMPANY

(Incorporated)

Hunting Park Ave. & Marshall Street

Philadelphia, Pa.

SPINDLE TAPES and BANDS



Diamond FIBRE

ROVING CANS
MILL BASKETS
BARRELS BOXES

Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel.

Write for Bulletin 12.

DIAMOND STATE FIBRE CO.

Bridgeport, Pa. **Elsmere, Del.**

Branches in Principal Cities.

Southern Agents:—E. S. Myers, 905 4th National Bank Bldg., Atlanta, Ga.; Pearson & Ramsaur, Greenville, S. C.

THE FINISH OF YOUR GOODS IS THE LIFE OF YOUR BUSINESS.

SOAPALITE

Puts a new meaning to the word "finish"

A Detergent Quick, Thoro, Harmless and Worth Your Close Investigation. Ask About It.

THE ELECTRIC SMELTING & ALUMINUM CO.
LOCKPORT, N. Y.

trade and obtaining a more thorough understanding among its various factors. This is the preliminary step that is intended to remove many difficulties that in the past have been difficult to get around. The matter is as yet in an experimental stage, but in the opinion of the several mill agents who were gathered for this meeting such an organization can be of vast help to the trade in standardizing the practices of the mills and eliminating some of the evils the old system fostered.

The Blue Ridge Knitting Co., at Hagerstown, Md., are arranging to increase the capacity of their present plant.

Clarence E. Keene, who is to be superintendent and general manager of the new Tennessee Textile Mills, Chattanooga, Tenn., accompanied by Clifford Friar, who is also interested in these mills, has recently returned from New York City, where $30,000 worth of machinery was contracted for to be shipped immediately. It is understood that the first year's output of the plant has already been sold. The plant of the Cedar Products Company in Alton Park has been purchased by the new company, and is to be slightly remodeled to accommodate the manufacture of women's and children's hose. The output will be restricted exclusively to lisle. When in operation, this mill will employ a working force of approximately 200 people.

Three thousand dozen pairs of hosiery will be the daily capacity of the mill which W. B. Davis, Fort Payne, Ala., and associates will build at Kingsport, Tenn., to be known as the Kingsport Hosiery Mills, with $500,000 capital and the following officers: W. B. Davis, president; Robert E. Davis, vice-president and secretary; J. Fred Johnson, treasurer; each of Fort Payne. The building will be four stories high and 300 feet long by 60 feet wide, of brick construction, costing $80,000. The mechanical equipment will include 600 knitting machines.

A new knitting mill is soon to be started at East Durham, N. C. Charles Bowen and others have leased a building, and have placed an order for 12 knitting machines. It is understood that about $3,000 will be spent in equipping the building for the work. This new mill will produce only rough finished hosiery.

The construction company building the Mercury Mills, Ltd., Hamilton, Ontario, is fast bringing it to completion, and it is expected to be in full operation within a short while. The buildings are of reinforced concrete construction, the flat slab or mushroom type of floor being used. This new plant is fireproof throughout. The main mill is a three-story structure with basement, and contains a floor area of about 80,500 square feet; the three-story dyehouse, 27,400 square feet; and the two-story picker house, 9,200 square feet. The plant also includes a boiler house 50 feet square. The entire plant, main mill, dyehouse and picker house will contain a total floor area of more than 100,000 square feet. While the reinforced concrete construction insures the permanence of the buildings themselves it does not protect their contents. This will be cared for by a complete automatic sprinkler system.

The Burkey Underwear Co. has leased a building at Hamburg, Pa., and will install machinery for the manufacture of ladies' light-weight cotton underwear. This will be a branch of the plant now operated by the company at Shoemakersville, Pa.

The Merchants Association at Mocksville, N. C., is planning to organize a knitting company and build a mill at Mocksville. Robert A. Blalock has the enterprise in hand.

The Lillington Hosiery Mill Co., of Lillington, N. C., was recently chartered with a capital of $10,000.

The Durham Hosiery Mills at Durham, N. C., are to build a branch mill at Mebane, N. C., with approximately $25,000. Contract for this new building has been awarded to the Fiske Carter Construction Company of Greenville, S. C. The machinery in their present mill at Mebane will be moved into the new building as soon as completed, the present building being occupied only on lease.

The Chilhowee Mills have been organized at Athens, Tenn., with a capital stock of $50,000. This company already has a two story brick building to which additions will be erected.

It is reported that some additional construction work is being done at Gainesville, Ga., by the Hetrick Manufacturing Company of that city. This company manufactures hosiery.

The New Castle (Pa.) Knitting Mills, manufacturers of hosiery, are installing 39 of the latest model Scott & Williams machines, bringing up their total equipment to 150. They are also installing new machinery in the dye house, purchased from Smith, Drum & Co., increasing their capacity to 3,000 pounds per day.

The West Side Knitting Co., Bethlehem, Pa., is so rushed with orders for worsted jersey cloth that it will increase the capacity of its mill to 2,500 yards a week, it is reported.

An Enterprising Paint Concern.

Two years ago Leon L. Wolf of the Leon L. Wolf Paint Co., of Cincinnati, Ohio, paid a visit to the Southern Textile Exposition at Greenville, S. C., and was so much impressed with the unlimited market that was presented for paints by the textile industry of the South that he postponed his trip to Florida and remained in the Carolinas until the following March, during which time he sold his products to many of the cotton mills. Since then, his business has grown to such an extent and the demand for his products so great that he has amalgamated with the R. F. Johnston Paint Co., of Cincinnati, Ohio.

Mr. Wolf writes us that he expects to be in the South within the next few weeks with a new product that his concern has put on the market within the last 60 days, that has met with a demand all over the United States. It is in a form of a basic white paste paint called Convertible White. It is a lead and zinc proposition, can be reduced for working purposes with either turpentine, linseed oil or varnish. The cost being much less than ready mixed paints or lead can be purchased today.

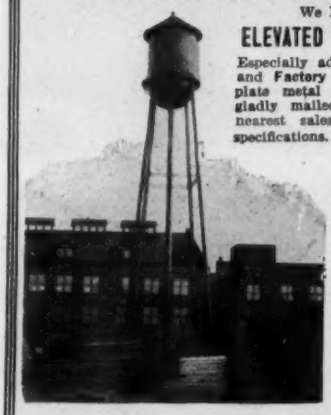
The Burdett Oxygen Company began the operation of its Oklahoma plant, located at the Stock Yards Station, Oklahoma City, on February 15th, and is now in a position to furnish oxygen to users in that territory. This is the twelfth plant installed by the Burdett Company in the various industrial centers of the country.

CHICAGO BRIDGE & IRON WORKS

We Design, Manufacture and Erect

ELEVATED STEEL TANKS AND STANDPIPES

Especially adapted for Cotton Mill Fire Protection and Factory Service. We also build all classes of plate metal construction. Our Catalogue No. 49 gladly mailed to you upon request. Write our nearest sales office today for prices, plans and specifications.



Charlotte, N. C., 501 Realty Building
Jacksonville, Fla., 805 Fla. Life Bldg.
Dallas, Texas, 1631 Praetorian Bldg.
New York 3133 Hudson Terminal Bldg.
Chicago, Ill., 2034 Old Colony Bldg.
Detroit, Mich., - 326 Ford Bldg.
Greenville, Pa. - 133 Pine St.
Los Angeles, Cal., Union Oil Bldg.
San Francisco, Cal., Monadnock Bldg.
Seattle, Wash., L. C. Smith Bldg.
Salt Lake City, Utah, Kearns Bldg.
Bridgeburg, Ont., - 133 Janet St.

SHOPS

Greenville, Pa., (Pittsburgh District.)
Chicago, Illinois.
Bridgeburg, Ont., Canada.

PERFECTOL

A CHEMICAL PREPARATION FOR PREPARING GOODS FOR

BLEACHING AND DYEING

A Strictly High-Class Preparation for Cotton and Mercerized Goods and Artificial Silk

PERFECTOL—For Bleaching and Dyeing. For removing oil- grease- and iron-spots and all impurities from cotton goods. Acts as a softener and can be used instead of Turkish Red Oil or any other kind of dyeing oil. Causes the dye to penetrate the goods better, improves the bleaching process considerably, prevents fading of colors in finished goods.

PERFECTOL evens the dyeing colors and increases the lustre.

Directions: .Use 2 to 3 poounds of PEFRECTOL to 100 pounds of goods. In standing bath: one-half pound to 100 pounds of goods.

PERFECTOL is a useful and easily adopted article. Manufactured in U. S. A.

References and prices on application. Special prices for contracts.
Further information cheerfully furnished.

Southern Chemical Laboratory

Chattanooga, Tenn. Wiehl Bldg.

WINDLE CLOTH DOUBLER WINDER AND MEASURER

For all grades of cotton fabrics.

Write for circular and list of users

J. E. Windle Worcester, Mass.

Elliot Cloth Folder and Measurer

FOR PRINT WORKS, GINGHAM AND COTTON MILLS, BLEACHERIES ETC., ETC.
Send for circular.

Manufactured by
ELLIOT & HALL, 55 Hermon St., Worcester, Mass.

B C
TRADE MARK

BARBER-COLMAN COMPANY

MAIN OFFICE AND FACTORY
ROCKFORD ILL

BOSTON, MASS. GREENVILLE, S.C.

WARP TYING MACHINES

HAND KNOTTERS FOR SPOOLING AND WINDING

FP Co

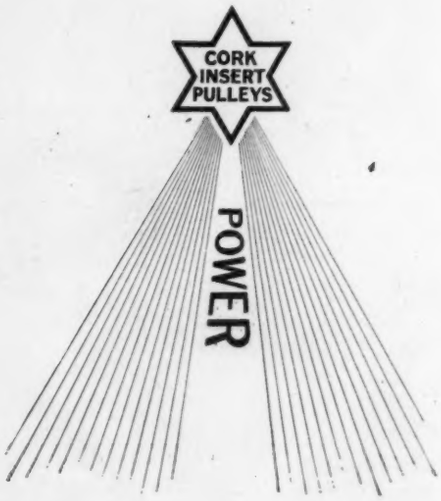
FRANKLIN PROCESS COMPANY

291 Promenade St.
PROVIDENCE, R. I.

As job dyers of cotton, wool and worsted yarns, we deliver the dyed yarns on parallel tubes that deliver either over end or by rotation. Our prices are moderate and deliveries very prompt.

We solicit your job dyeing.

THE STAR
Of the Power Transmission World
Watch Its Beams Spread



The SIX Points of SAVING—

POINT 1

POWER

In 1911 The Washburn Wire Company, of Phillipsdale, R. I., replaced with a Cork Insert Pulley, an ordinary iron main drive pulley receiving from a 1400 H. P. engine. The ordinary pulley even with the help of an idler and belt tightener could not deliver the necessary power to do the work. *Last September they put in two more 1500 H. P. Cork Insert Pulleys because of the power saved by the original Installation.*

CORK INSERT PULLEYS

saved them $3400—the difference between the cost of the Cork Insert Pulley and the cost of the rope drive which was the only alternative.

WRITE US TO SHOW YOU how Cork Inserts can save power and cut operating costs *for you.*

The Cork Insert Co.

162 Federal Street
Boston, Mass.

Advertisers' Index

Alberfoyle Mfg. Co. 298
Acme Steel Goods Co. 179
Allen Mfg. Co., The 36
Allen Sons Co., Wm. 195
Allis-Chalmers Mfg. Co. 10
American Audit Co. 180
American Crayon Co. 36
American Kron Scale Co. 25
American Laundry Mchy. Co. The 198
American Mach'ne Co., H. & B.287
American Pulley Co. 27
American Soap & Washoline Co.173
American Supply Co. 171
American Textile Banding Co., Inc. 311
Amory, Browne & Co. 186
Anchor Post Iron Works 31
Arabol Mfg. Co. 171
Atlanta & West Point Ry.....185
Atlanta Rubber Stamp & Stencil Wks. 177
Automatic Transportation Co. ...

Baltic Chemical Co. 194
Barber-Colman Co. 169
Barber Mfg. Co. 311
Barrett Co., The 283
Bayer Co., Inc., The 195
Baylis Office Equipment Co...175
Beer, H. & B. 186
Betz Co., Frank S. 28
Bird-Wilcox Co. 29
Birmingham Slag Co. 171
Blandin Co. 20
Boss Knitting Machine Works.306
Bosson & Lane 191
Boston Economy Lamp Div....177
Bound-Brook Oil-less Bear'ng Co. 26
Bradley Mfg. Co., A. J. 179
Brinton Co., H. 306
Brown & Bro., B. 191
Butterworth & Sons Co., H. W. 196

Carrier Engineering Corp.....173
Cary Mfg. Co. 23
Casey-Hedges Co., The.....200
Cement Products Co. 183
Central of Georgia Railway...185
Central Ga. Power Co. 12
Chaffee Co., Thos. K. 281
Chapman Mfg. Co. .....
Chattanooga Iron Works 177
Chemical Co. of America.....193
Chesapeake & Ohio Coal & Coke Co. 291
Chicago Bridge & Iron Wks...169
Clayton & Bentley Co.....
Clinton Cam Co. 22
Cocker Machine & Foundry Co.197
Collins, J. D. 173
Columbus Truck & Supply Mfg. Co. 196
Conr, Frederick H. 193
Cork Insert Co. 169
Corn Products Refining Co.....189
Cortright Metal Roofing Co...311
Cramer, Stuart W. 19
Crompton & Knowles Loom Works 17
Cyclone Fence Co. 14

Davis, Rogers W. 17
Delahunty Dyeing Machine Co.195
Diamond State Fibre Co. 311
Dicks, David & Broadfoot, Inc.200
Dixie Culvert & Metal Co..... 182
Dixie Seal & Stamp Co.....179
Dixon Crucible Co., Joseph... 36
Dixon Lubricating Saddle Co...177
Dockham Publishing Co. 181
Draper Co. .....2 and 3
Dufur & Co. 177

Economy Baler Co. 177
Economy Fuse & Mfg. Co. 10
Electric Smelting & Aluminum Co. 311
Electro Bleaching Gas Co.....188
Electro Chemical Co. 190
Elliott & Hall 169
Emmons Loom Harness Co....175
Erdle Perforating Co. 180

Excelsior Pulley Co. .....
Farbwerke-Hoechst Co. 177
Fawcett, Hughes 186
Felton Brush Co., D. D..... 34
Felton & Son Co., S. A. 34
Fibre Specialty Co. 24
Firsching, J. A. 311
Flota Mica Sales Co. 179
Formen Trading Co. 193
Foster, G. W. 18
Foster Engineering Co. 30
Freadrich Belting Co. 26
Franklin Process Co....169 & 200

Garland Mfg. Co. 36
General Electric Co. 33
General Machine Works 308
General Roofing Mfg. Co. ....
Georgia Railroad 185
Gismond & Co., Inc., Jas. C...194
Goodrich Co., B. F. 6
Graton & Knight Mfg. Co..... 7
Greenville Iron Works 173

Hemphill Mfg. Co. 300
High Grade Mfg. Co. 171
Holland Aniline Co. 191
Home Bleach & Dye Works... 34
Hotel Lenox 184
Hotel Martinique 184
Hotel Tuller 184
Howard & Bullough American Machine Co. 287
Howard Clock Co., E. 200
Howard & Morse 179
Hubbard Mach'ne Co. 26
Hunt Co., Inc., C. W. 27
Hunter Machine Co., Jas.....196

Jordan Manufacturing Co..... 36

Kali Mfg. Co. 191
Keever Starch Co. 190
Kellogg & Co., E. H. 179
Keystone Fibre Co. 24
Klipstein & Co., A. 194

Lane & Bro., W. T. 23
Leatheroid Mfg. Co. 24
Lehnert Textile Co. 19
Leigh & Butler 177
Lewis, John D. 311
Lewis-Hall Iron Works 5
Lincoln Electric Co. 9
Link-Belt Co. 8
Lombard Iron Works & S. Co..180
Lyster Chemical Co. .....

Madero Bros. 194
Manufacturers Equip. & Eng. Co. 29
Marden, Orth & Hastings.....192
Merrow Machine Co. 306
Mississippi Wire Glass Co..... 31
Missouri Lamp & Mfg. Co.....175
Morehead Mfg. Co. 1

National Aniline & Chemical Co. 192
National Asso. Hosiery & Underwear Mfgrs. 184
National Scale Co. 22
New York Blower Co. 28
N. Y. & N. J. Lubricant Co..173
Nye & Tredick Co. 308

Ohio Blower Co. 32

Papco Paper Products Co.....193
Palmer Co., I. E. 20
Paulson Linkroum & Co.....186
Pearson, Jos. T. 308
Phila. Drying Machinery Co...200
Phila. Textile Mchy. Co.....197
Phoenix Dye Products Corp....194
Prest-O-Lite Co. 29
Pyrene Mfg. Co. 285

Refinite Co., Inc. 295
Reliance Machine Works 308
Root Co., C. J. 21
Roy & Son Co., B. S. 19

S. K. F. Ball Bearing Co.....293
Saco-Lowell Shops 17
Salem Iron Works 195
Salkeld & Bros., A. D. 186
Sanitary Products Corp. 181
Sargent's Sons Corp., C. G....198
Scaife & Sons Co., Wm. B....193
Schofield Co., Wm. 20
Schofield's Sons J. S. 175
Scott & Williams Inc. 297
Second-Hand Machinery 187
Seeger-Walraven Co. 180
Selig Co., The 183
Seydel Mfg. Co. 179
Shambow Shuttle Co. 34
Shutting Co., Rudolph J. 36
Sirrine, J. E. 180
Smith, Drum & Co.....199
Smith & Furbush Mch. Co..... 18
Southern Chemical Laboratory.169
Southern Novelty Co. 18
Southern Railway 185
Southern Spindle & Flyer Co.. 20
Spray Engineering Co. 30
Stafford Co., The 16
Stafford & Holt 306
Standard Aniline Products, Inc. 188
Standard Fibre Co. 24
Stewart Iron Works Co..... 32
Sykes & Co., Walter F. 193

Taylor Instrument Co. 173
Textile Finishing Mchy. Co...199
Textile Specialty Co. 27
Toledo Scale Co. 15
Tolhurst Machine Works.....197
Toomey, Frank, Inc. 187
Transmission Ball Bearing Co.. 25

Ullman Philpott Co. 298
Union Mfg. Co. .....

Veeder Mfg. Co. 21
Vogel Co., Jos. A. 182

Wadsworth, Howland & Co., Inc. 4
Want Ads. 187
Walsh & Weidner Boiler Co.... 30
Weimer Bros. 186
Western Electric Co. 10
Westinghouse Elec. & Mfg. Co. .....11 and 13
Westinghouse Lamp Co. .....
West Point Iron Works 173
White Chemical Co. 187
Whitinsville Spinning Ring Co. 16
Whiton Machine Co., D. E. ... 26
Wildman Mfg. Co. 304
Willcox & Gibbs Sewing Machine Co. 302
Windle J. E. 169
Wolf & Co., Jacques 193
Wolf Paint Co. Leon L..... 32
Woodward-Baldwin & Co. ...186
Worcester Steam Boiler Wks...195

Rectified Tallow

FOR MANUFACTURERS who prefer the use of Raw Tallow or Soluble Oil we offer our RECTIFIED RAW TALLOW. Preferable to ordinary market tallow. NO IMPURITIES, NO MILDEW.

Arabol Manufacturing Co.

100 William St. New York City.

Southern Sales Agent: CAMERON MacRAE, Charlotte, N. C.

AMERICAN SUPPLY COMPANY

Providence, R. I.

Manufacturers of **Loom Harness, Weaving Reeds,**

Oak Tanned Leather Belting, Strapping, Etc.

WE MAKE A SPECIALTY OF HARNESS FOR WARP DRAWING MACHINES

NOTE—No orders too large for our capacity. None too small to receive careful attention.

Slag as a Concrete Aggregate

Recommended by

Sanford E. Thompson.

Watch the news and editorial columns of your technical journal devoted to Engineering and kindred subjects for full report of this remarkably interesting paper prepared for the

Stone & Webster Engineering Corporation

and read at annual meeting American Concrete Institute, Chicago, Feb. 8th, by one of our most prominent national and international authorities on reinforced concrete.

Don't fail to make yourself familiar with the result of Mr. Thompson's investigations before closing contract for concrete structural work of any type. Write us if article in question is, otherwise, not readily available.

Birmingham Slag Company,

1607-16 Jefferson County Bank Bldg., Birmingham, Alabama.

Stop That Leak In Your Roof.

GILSO CEMENT makes your roof watertight. It's an elastic, tenacious roof cement that never cracks, freezes, runs or peels. Anyone can apply it.

For any kind of roof, metal, shingle, felt or slate. It remains elastic under all weather conditions, and lasts for years.

Highly recommended for painting metal or any surface you desire to protect against rust or corrosion, acids, alkalis or sulphuric acids.

Give it a trial and convince yourself that Gilso Cement is by far the most practical and economical material for the protection of all exposed surfaces. Fill out the coupon and mail today.

The High Grade Manufacturing Co.

Cleveland, Ohio

The High Grade Mfg. Co.
Box 93, Station H, Cleveland, O.
Send us prices and testimonials from large users.
Name.....
City.....
State.....

Buyers' Index

Acetylene Welding Apparatus.
(See Welding Apparatus.)

Acetylene Gas.
Bird-Wilcox Co.
Prest-O-Lite Co.

Air Brakes.
Allis-Chalmers Mfg. Co.

Air Conditioning Systems.
(See Humidifying Apparatus.)

Alkalies.
(See Dyestuffs and Chemicals.)

Aniline Colors.
(See Dyestuffs and Chemicals.)

Anti-Chlorine.
(See Dyestuffs and Chemicals.)

Aprons—Bub.
Graton & Knight Mfg. Co.
Smith & Furbush Machine Co.

Aprons—Rubber.
Goodrich Co., B. F.

Architects and Engineers.
Cramer, Stuart W.
Saco-Lowell Shops.
Sirrine, J. E.

Artist—Commercial.
Shutting Co., R. J.

Ash Handling Machinery.
Hunt Co., C. W.
Link-Belt Company.

Asphalt Slate Shingles.
(See Slate Asphalt Roofing.)

Auditors and Accountants.
American Audit Co.

Auto Trucks.
(See Trucks—Auto.)

Ball Bearings.
Chapman Mfg. Co.
S. K. F. Ball Bearing Co.
Transmission Ball Bearing Co., Inc.

Ball Bearing Spindles.
(See Spindles—Ball-Bearing.)

Bale Band Buckles.
(See Buckles.)

Bale Ties.
Acme Steel Goods Co.

Baling Machines.
Crompton & Knowles Loom Wks.
Draper Co.
Economy Baler Co.
Saco-Lowell Shops.
Seeger-Walraven Co.

Baling Presses.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Philadelphia Drying Mchy. Co.
Seeger-Walraven Co.
Smith & Furbush Mch. Co.

Banding.
Acme Steel Goods Co.
American Textile Banding Co., Inc.
Cary Mfg. Co.
Seydel Mfg. Co.

Banding Machinery and Bandings.
(See Box Strapping.)

Baskets—Mill.
(See Boxes—Mill.)

Baskets—Waste.
Baylis Office Equip. Co.

Beam Dyeing Machine.
Cocker Mchy. & Foundry Co.
Columbus Truck & Supply Mfg. Co.
Salem Iron Works.

Beaming and Warping Mchry.
(See Warpers and Warping Machinery.)

Bearings—Adjustable.
Textile Specialty Co.

Bearings.
Bound Brook Oil-less Bearing Co.
Hubbard Mch. Co.
S. K. F. Ball Bearing Co.
Textile Specialty Co.
West Point Iron Wks.

Beater Boxes—Ball Bearing.
Hubbard Mch. Co.

Belting, Leather.
American Supply Co.
Freadrich Belting Co.
Graton & Knight Mfg. Co.

Belting, Link.
Link-Belt Company.

Belting—Rubber.
Goodrich, Co., B. F.

Belt Cement.
Freadrich Belting Co.
Goodrich Co., B. F.
Graton & Knight Mfg. Co.

Belt Conveyors.
Link-Belt Company.

Belt Dressing.
Jos. Dixon Crucible Co.
Freadrich Belting Co.
Graton & Knight Mfg. Co.

Belt Lacing, Leather.
Freadrich Belting Co.
Graton & Knight Mfg. Co.

Belt Tighteners.
Hunter Mch. Co., Jas.
Link-Belt Company.

Bleacheries.
(See Dyers, Bleachers and Finishers.)

Bleaching Kiers.
Allen Sons Co., Wm.
Butterworth & Sons Co., H. W.
Philadelphia Drying Machy. Co.
Salem Iron Works.
Textile Finishing Machinery Co., The.
Worcester Steam Boiler Wks.

Bleaching Machinery.
American Laundry Machinery Co., The
Butterworth & Sons Co., H. W.
Cocker Mchy. & Foundry Co.
Delahunty Dyeing Machine Co.
Electro Chemical Co.
Franklin Process Co.
Philadelphia Drying Machy. Co.
Salem Iron Works.
Tolhurst Machine Works.
Smith, Drum & Co.

Bleaching Materials.
Baltic Chemical Co.
Bosson & Lane.
Brown & Bro., B.
Chemical Co. of Ameri a.
Cone, Frederick H.
Electro Bleaching Gas Co.
Electro Chemical Co.
Electric Smelting & Alum. Co.
Formen Trading Co.
Kali Mfg. Co.
Madero Bros.
Marden, Orth & Hastings Co.
National Aniline & Chemical Co.
Phoenix Dye Products Co.
Seydel Mfg. Co.
Southern Chemical Lab.
Wolf & Co., Jacques.

Blowers and Blower Systems.
Carrier Eng. Corp.
General Electric Co.
Howard & Morse.
Leigh & Butler.
New York Blower Co.
Ohio Blower Co.
Phila. Drying Machinery Co.
Westinghouse Elec. & Mfg. Co.

Boards—Form.
Pearson, Jos. T.
Textile Finishing Mch Co.

Bobbins.
Draper Co.
Jordan Mfg. Co.
Leigh & Butler.
Shambow Shuttle Co.

Bobbin Painting Machines.
Blandin Co.

Boilers.
Casey-Hedges Co.
Chicago Bridge & Iron Co.
Collins, J. D.
Lombard Iron Works & Supply
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.
Co.

Boiler Feed Water Purification.
(See Water Softeners.)

Boiler Graphite.
Jos. Dixon Crucible Co.

Box Strapping and Tie Buckles.
Acme Steel Goods Co.
Cary Mfg. Co.
Draper Co.

Boxes (Mill).
Columbus Truck & Supply Mfg. Co.
Diamond State Fibre Co.
Fibre Specialty Co.
Keystone Fibre Co.
Lane & Bro.
Leatheroid Mfg. Co.
Standard Fibre Co.

Bronze Work.
Chattanooga Iron Works.

Brushes (Mill).
Felton Brush Co., D. D.
Felton, S. A. & Son Co.

Brushes (Commutator).
Dixon Crucible Co., Jos.
General Elec. Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Buckets (Elevator and Grab).
Link-Belt Company.

Buckles (Cotton Tie).
(See Box Strappings and Ties.)

Building Contractors.
(See Architects & Engineers.)

Building Material.
Anchor Post Iron Works
Barrett Co., The
Birmingham Slag Co.
Chattanooga Iron Works.
Chicago Bridge & Iron Co.
Cyclone Fence Co.
Dufur & Co.
General Roofing Mfg. Co.
Mississippi Wire Glass Co.
Stewart Iron Works Co.
Wadsworth, Howland & Co.

Burr Pickers.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Bushings
Bound Brook Oil-less Bearing Co.
Southern Spindle & Flyer Co.

Cabinets (Metal).
Manufacturers Equip. & Eng. Co.

Calling System.
National Scale Co.

Cam Device & Patch.
Clinton Cam Co.

Cans—Roving.
Columbus Truck & Supply Mfg Co.
Diamond State Fibre Co.
Fibre Specialty Co.
Keystone Fibre Co.
Leatheroid Mfg. Co.
Standard Fibre Co.

Cars and Trucks—Fibre.
(See Trucks.)

Carbonizing Machines.
Philadelphia Drying Machy. Co.
Phila. Textile Mchy. Co.
Sargents Sons & Co., C. G.
Textile Finishing Machinery Co., The.

Carding Machinery.
Howard & Bullough.
Hubbard Machine Co.
Saco-Lowell Shops.
Smith & Furbush Mach. Co
Southern Spindle & Flyer Co.

Card Cleaner.
Lehnert Textile Co.

Card Clothing.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Card Feeds.
Schofield, Wm. & Co.
Smith & Furbush Mach. Co

Card Grinding Machinery.
Lehnert Textile Co.
Leigh & Butler Co.
Roy & Sons Co., B. S.
Smith & Furbush Mch. Co

Card Mounting Apparatus.
Lehnert Textile Co.

Carpet Machinery.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Wks.
Philadelphia Drying Machy. Co.
Phila. Textile Machy. Co.
Schofield, Wm. & Co.
Smith & Furbush Mach. Co.
Textile Finishing Machy. Co., The

Carrier Aprons.
(See Aprons).

Castings—Mill.
Greenville Iron Works.
Salem Iron Works.
West Point Iron Wks.

Caustic Soda.
(See Soda—Textile.)

Cement Machinery.
Allis-Chalmers Mfg. Co.

Cement and Brick Coating.
High Grade Mfg. Co.
Wadsworth, Howland & Co

Central Stations.
Alabama Power Co.
Augusta-Aiken Railway & Elec. Corp.
Central Georgia Power Co.
Columbus Power Co.
Georgia Railway & Power Co.

Chain Drives
Link-Belt Company

Chairs—Office and Mill.
Baylis Office Equip. Co
Manufacturers Equip. & Eng. Co.

Checks (Metal).
(See Stamps, Stencils, etc.,

Chemicals.
(See Dyestuffs and Chemicals.)

Chlorine Gas.
Electro Bleaching Gas Co.

Clocks—Hank, Etc.
(See Counters.)

Clocks—Tower.
Howard Clock Co., E.

Closets—Water.
(See Toilets.)

Cloth Cutters
Firsching, J. A.
Wildman Mfg. Co.
Windle, J. E.

Cloth Doubling Machinery.
Elliott & Hall.
Windle, J. E.

Cloth Expanders.
Windle, J. E.

Cloth Measurer.
(See Measuring Machine.)

Cloth Room Machinery.
Butterworth, H. W. & Sons Co
Elliott & Hall.
Firsching, J. A.
Hunter Mch. Co., Jas.
Saco-Lowell Shops.
Smith, Drum & Co.
Textile Finishing Machinery Co

American Soap & Washoline Co.

Established 1861.

COHOES, NEW YORK

Largest Manufacturers of Textile Soaps and Soap Powders in the United States.

FOR ALL COTTON MILL USES.

The following concerns are now handling our Goods and will supply you at Factory Prices.

Waters-Garland Co., Louisville, Ky.; Carolina Supply Co., Greenville, S. C.; Southern Belting Co., Atlanta, Ga.; Montgomery & Crawford, Spartanburg, S. C.; Sullivan Hardware Co., Anderson, S. C.; Charlotte Supply Co., Charlotte, N. C.; McAnelly Hardware Co., Huntsville, Ala.

Go-As-You-Please Lubrication Doesn't Pay

The hit or miss method may have been well and good 20 years ago—but today you must buy lubricant on performance—not on promise.

NON-FLUID OIL

Is the lubricant that makes good throughout the mill.

It remedies the faults of fluid oil because it does not leak, does not fly onto floors, walls or clothing. DOES NOT CAUSE OIL STAINS.

It overcomes the deficiencies of grease because it feeds instantly, does not melt, is ALL a pure lubricant. It lasts three times as long as grease and is far better.

NON-FLUID OIL reduces your lubricant costs.

A grade for every purpose.

Write for samples and literature

New York & New Jersey Lubricant Co.

165 Broadway New York

REPAIRING

MILL MACHINERY OF ANY KIND

If you have any broken machinery that needs repairing, and want the highest quality work at the lowest price we want your business. We make a specialty of reboring engine cylinders, valves, etc.

Our excellent equipment and facilities, combined with skilled workmanship, enables us to turn out quality work at the lowest prices, and assures you satisfaction.

All repairs handled promptly, and shipments made without loss of time.

The cotton mill castings that we make are of the same high quality—in brass, grey iron, etc. Send us samples or blueprints and let us estimate.

Write for full information.

GREENVILLE IRON WORKS, GREENVILLE, S. C.

WEST POINT IRON WORKS

High Grade Textile Repair Castings,

Loom Beams, Beam Heads, and Special Work.

S. K. F. Ball Bearings Complete.

Write us.

WEST POINT, GA.

Tycos

Temperature Instruments

INDICATING
RECORDING
CONTROLLING

Correspondence Invited

The H&M Division

Taylor Instrument Companies

Rochester, N.Y.

There's a *Tycos* or *Taylor* Thermometer for Every Purpose

Heavy Loads Raised High At Low Cost.

This man can raise the heaviest bale to any height with ease and absolute safety. The efficiency and capacity of his warehouse is increased to the maximum.

There are many other uses for this machine in the mill and warehouse. Let us send you our booklet No. 26-C which describes this Labor Saver.

J. D. COLLINS

Machinery

927 Grant Bldg., Atlanta, Ga.

Humidity and Temperature Regulation In Textile Mills

Consultation, Designs, Construction, Equipment and Installation—Complete or in part.

Write for textile mill bulletin.

Carrier
AIR CONDITIONING AND DRYING EQUIPMENT

Carrier

Engineering Corporation

39 Cortlandt St., New York

Boston, 176 Federal St. Philadelphia, Land Title Bldg.
Buffalo, Mutual Life Bldg. Chicago, Transportation Bldg.

BUYERS' INDEX—Continued.

Wildman Mfg. Co.
Windle, J. E.

Cloth Shrinking Machinery.
Reliance Machine Works.

Cloth Tubes.
(See Tubes—Cloth Protecting.)

Cloth Winders.
(See Winders).

Clutches (Friction).
Cork Insert Co.
Hunter Mch. Co., Jas.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Coal & Coke.
Chesapeake & Ohio Coal & Coke Co.

Coal Driers (Centrifugal).
Link Belt Company.

Coal Handling Machinery.
Hunt Co., C. W.
Link-Belt Company.

Coal Tar Disinfectants.
See Disinfectants.

Colors.
(See Dyestuffs and Chemicals.)

Comb Aprons.
(See Aprons.)

Commission Merchants and Dealers.
(See Cotton Cloth Commission Merchants.)

Compressors (Air).
Allis-Chalmers Mfg. Co.
General Electric Co.
Seeger-Walraven Co.

Condensers.
Allis-Chalmers Mfg. Co.
Seeger-Walraven Co.

Cones—Paper.
(See Tubes—Cloth Protecting.)

Contractors
(See Architects and Engineers.)

Conveying Machinery.
Collins, J. D.
Excelsior Pulley Co.
Hunt Co., C. W.
Leigh & Butler.
Link-Belt Company.
Phila. Drying Machinery Co.
Philadelphia Textile Machinery Co.
Saco-Lowell Shops
Schofield, Wm. & Co.
Seeger-Walraven Co.
Smith & Furbush Mach. Co.

Coolers.
(See Humidifying Apparatus.)

Cooling (Condensing Water).
Spray Eng. Co.

Copper Stamps and Stencils.
(See Stamps, Stencils, Etc.)

Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

Cork Insert Pulleys.
(See Pulleys—Cork Insert.)

Cotton Cloth Commission Merchants and Dealers.
Armory Browne & Co.
Fawcett, Hughes.
Paulson, Linkroum & Co.
Salkeld & Bro. A. D.
Weimer Bros.
Woodward, Baldwin & Co.

Cotton Dealers and Brokers.
Beer, H. & B.

Cotton Machinery.
Barber-Colman Co.
Butterworth & Sons, H. W.
Cocker Mch. & Foundry Co.
Columbus Truck & Supply Mfg. Co.
Cramer, Stuart W.
Crompton & Knowles Loom Wks.
Delahunty Dyeing Mach. Co.
Draper Co.
Elliot & Hall.
Firsching, J. A.
Howard & Bullough.
Hunter Mch. Co., Jas.
Leigh & Butler.
Phila. Drying Mchy. Co.
Phila. Textile Machy. Co.
Sargent's Sons, Corp., C. G.
Saco-Lowell Shops.
Schofield & Co., Wm.
Smith & Furbush Mach. Co.
Stafford Co., The
Textile Finishing Machinery Co., The
Whitinsville Spinning Ring Co.

Coupling—Rope.
Hunt Co., C. W.

Counters—Revolution, Hank, Pick, Etc.
National Scale Co.
Root Co., C. J.
Veeder Mfg. Co.

Cranes (Locomotive).
Link-Belt Company.

Crayons.
American Crayon Co.
Dixon Crucible Co.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cuspidors.
Baylis Office Equip. Co.

Cutters (Cloth).
(See Cloth Cutters.)

Dies (Steel).
(See Stamps, Stencils, Etc.)

Disinfectants.
Barrett Co., The.

Dobby Chains.
Crompton & Knowles Loom Wks.

Doffing Boxes (Mill).
(See Boxes—Mill).

Drawings of Mills.
Shutting Co., R. J.

Drawing Frames.
Howard & Bullough.
Saco-Lowell Shops.

Drills—Electric.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Drying Machinery.
Butterworth, H. W. & Sons Co.
Cocker Mch. & Foundry Co.
Hunter Mch. Co., Jas.
Phila. Drying Machy. Co.
Phila. Textile Machy. Co.
Salem Iron Works.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The.

Dust Collectors.
(See Blowers and Blowing Systems.)

Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Franklin Process Co.
Home Bleach & Dye Works.

Dyeing, Bleaching and Finishing Machinery.
American Laundry Mchry. Co., The.
Butterworth & Son Co., H. W.
Cocker Mch. & Foundry Co.
Columbus Truck & Supply Mfg. Co.
Delahunty Dyeing Machine Co.
Elliot & Hall.
Electro Bleaching Gas Co.
Electro Chemical Co.
Firsching, J. A.
Franklin Process Co.
Hunter Mch. Co., Jas.
Klipstein & Co.
Leigh & Butler.
Phila. Drying Machy. Co.
Smith, Drum & Co.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Reliance Machine Works.
Salem Iron Works.
Smith, Drum & Co.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

Dye Sticks.
Phila. Drying Machinery Co.

Dyestuffs and Chemicals.
Aberfoyle Mfg. Co.
Arabol Mfg. Co.
Baltic Chemical Co.
Bayer Co.
Bosson & Lane.
Brown & Bro., B.
Chemical Co. of America.
Cone, Frederick H.
Dicks David & Broadfoot, Inc.
Electro Bleaching Gas Co.
Farbwerke, Hoechst & Co.
Formen Trading Co.
Gismond & Co., Inc., Jas. G.
Holland Aniline Co.
Kali Mfg. Co.
Klipstein & Co., A.
Lewis, John D.
Madero Bros.
Marden, Orth & Hastings Co.
National Aniline & Chemical Co.
Phoenix Dye Products Corp.
Seydel Mfg. Co.
Southern Chemical Lab.
Standard Aniline Products, Inc.
Sykes & Co., Walter F.
White Chemical Co.
Wolf & Co., Jacques.

Electric Dynamos and Motors.
(See Motors and Generators.)

Electric Lamps.
(See Lamps.)

Electrical Machinery and Supplies.
Allis-Chalmers Mfg. Co.
Economy Fuse & Mfg. Co.
General Electric Co.
Lincoln Elec. Co.
Seeger-Walraven Co.
Walsh & Weidner Boiler Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Trucks (Inter-Transportation).
(See Trucks—Electric.)

Elevators
Collins, J. D.
Hunt Co., C. W.
Link-Belt Company.
Seeger-Walraven Co.

Engineers, Consulting.
(See Architects.)

Engines (Oil, Gas and Gasoline).
Seeger-Walraven Co.

Engines (Steam).
Allis-Chalmers Mfg. Co.
Collins, J. D.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Seeger-Walraven Co.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Expanders (Cloth).
(See Cloth Expanders.)

Extractors—Hydro.
American Laundry Mchy. Co. The
Tolhurst Machine Works

Fans—Electric.
Allis-Chalmers Mfg. Co.
General Electric Co.
Howard & Morse.
Lincoln Electric Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems.)

Feed Water Purifiers.
(See Water Softeners.)

Felting Machinery.
Smith & Furbush Mach. Co.

Fence—Steel and Iron.
Anchor Post Iron Works.
Cyclone Fence Co.
Stewart Iron Works.

Filing Cabinets & Systems.
Baylis Office Equip. Co.

Filters (Water).
(See Water Softening.)

Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing and Sizing Materials.
Aberfoyle Mfg. Co.
American Soap & Washoline Co.
Baltic Chemical Co.
Bosson & Lane.
Brown & Bro., B.
Chemical Co. of America.
Cone, F. H.
Corn Products Refining Co.
Electro Bleaching Gas Co.
Electric Smelting & Alum. Co
Former Trading Co
Kali Mfg. Co.
Klipstein & Co., A.
Madero Bros.
Marden, Orth & Hastings.
National Aniline & Chemical Co.
Phoenix Dye Products Corp.
Seydel Mfg. Co.
Southern Chemical Lab
Standard Aniline Products, Inc.
Wolf & Co., Jacques.

Fire Extinguishers.
Missouri Lamp & Mfg. Co.
Pyrene Mfg. Co.

Fire Hose.
(See Hose—Fire.)

Fire Protecting Paint.
(See Paint—Fireproof.)

First Aid Room Equipment.
(See Hospital Equipment.)

Fluted Rolls.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.

Flyers.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Folding Machines (Cloth).
Elliott & Hall.
Windle, J. E.

Fountains—Drinking.
Manufacturers Equip. & Eng. Co.

Friction Clutches.
(See Clutches—Friction.)

Fulling Mills for Woolen Goods.
American Laundry Mchy. Co.
Hunter Mch. Co., Jas.

Furniture—Office and Mill.
Manufacturers Equip. & Eng. Co.
Baylis Office Equip. Co.

Fuses.
Economy Fuse & Mfg. Co.
General Elec. Co.
Western Electric Co.

Garnett Machines.
Hunter Mch. Co., Jas.
Leigh & Butler.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gaskets—Fibre.
Diamond State Fibre Co.

Gaskets—Rubber.
Goodrich Co., B. F.

Gears (Silent).
Diamond State Fibre Co.
General Electric Co.
Western Electric Co.

Generators (Electric).
(See Motors and Generators.)

Glass (Wire).
Mississippi Wire Glass Co.

Grain Bags.
American Supply Co.

Grates—Shaking.
Collins, J. D.
Lombard Fdy. & Mch. Co.

Grease.
(See Lubricants.)

Grinders (Card).
(See Card Grinding Machinery.)

Gummed Tape and Moistening Machine for Slashers.
Papco Paper Products Co.

Gums.
(See Finishing and Sizing Materials.)

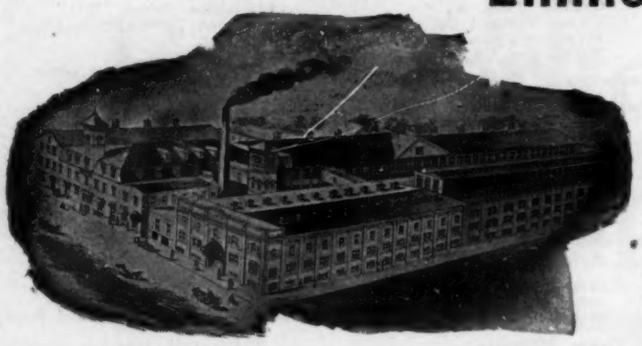
Hangers.
(See Shafting and Hangers.)

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Garland Mfg. Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus.)

Heddles.
Crompton & Knowles Loom Wks.
Draper Co.

Emmons Loom Harness Co.



The Largest Manufacturers of Loom Harness and Reeds in America.

Loom Harness and Reeds

COTTON HARNESS for all kinds of plain and Fancy Weaves in Cotton and Silk Goods.
MAIL HARNESS for Cotton Duck, Worsted, Silk and Woolen Goods.
SELVEDGE HARNESS, any depth up to 25 inches, for Weaving Tape Selvedges.
REEDS for Cotton, Woolen, Silk and Duck.
Slasher and Striking Combs, Warper and Leice Reeds, Beamer and Dresser Hecks, Mending Eyes, Jacquard Heddles.

LAWRENCE, ... MASS

FIRE! FIRE!

Has that alarm ever made the cold chill run up your back?

If not, then you've got something coming to you. **Are you prepared?**

A cotton mill fire is the hardest kind of fire to put out after it gets started. Are you prepared to quench it before it gets started?

Insurance compies recognize

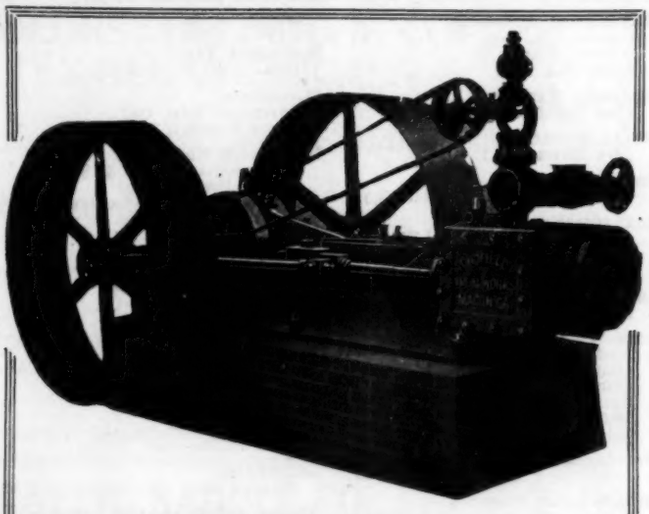
ACME

FIRE EXTINGUISHERS

as mighty valuabe fire preventers, and any company will reduce your fire insurance rates if you install them. The Acme Extinguishers are examined, tested and labeled under the direction of the Underwriters' Laboratories, Inc.

Ask today for prices on an installation in your mill.

Missouri Lamp & Mfg. Co.,
ST. LOUIS, U. S. A.



J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

What About Your Mill Office?

Is your office just a plain "cotton factory" office with worn-out furniture and inefficient filing systems, etc.?

Or is it a modern "Textile Mill" office, with up-to-date office furniture and "easy of access" filing systems—an office that has a brisk, business-like look to it?

Let us make your office up-to-date. We carry everything for the mill office,—desks, chairs, tables, Globe-Wernicke filing cabinets,—everything that is used in an office.

Our prices are right—our service is prompt.

Baylis Office Equipment Company
ATLANTA, GA.

BUYERS' INDEX—Continued.

Heddle Frames.
Crompton & Knowles Loom Wks.

Hoist (Electric).
Link-Belt Company.
Seeger-Walraven Co.

Hose—Air.
Goodrich Co., B. F.

Hose (Fire).
Goodrich Co., B. F.

Hose—Steam.
Goodrich Co., B. F.

Hose—Water.
Goodrich Co., B. F.

Hosiery Finishing Boards.
(See Boards.)

Hospital Equipment.
Betz, Frank S.
White Chemical Co.

Hotels.
Lenox.
Martinique.
Tuller.

Humidifying Apparatus.
Carrier Eng. Corp.
Cramer, Stuart W.
Spray Eng. Co.

Hydraulic Turbines.
(See Turbines Steam.)

Hydro Extractors.
(See Extractors.)

Indigo.
(See Dyestuffs and Chemicals.)

Ink (Stencil).
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Dixie Seal & Stamp Co.

Ink—Writing.
Baylis Office Equip. Co.

Iron Work—Ornamental.
Anchor Post Iron Works.
Chattanooga Iron Works.
Chicago Bridge & Iron Wks.
Cyclone Fence Co.
Dufur & Co.
Salem Iron Works.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

Kettles—Soda.
Manufacturers Equip. & Eng. Co.

Kiers.
(See Bleaching Kiers.)

Knit Goods Washers.
(See Washers—Cloth.)

Knitting Machinery.
Boss Knitting Mach. Works.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Nye & Tredick Co.
Scott & Williams.
Stafford & Holt.
Smith & Furbush Mach. Co.
Wildman Mfg. Co.

Lace Leather.
Graton & Knight Mfg. Co.

Lamps—Incandescent and Arc.
Boston Economy Lamp Div.
General Electric Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.
Westinghouse Lamp Co.

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

Laundry Machinery.
American Laundry Mach. Co., The
Tolhurst Machine Works.

Lockers (Metal)
Manufacturers Equip. & Eng. Co.

Leather Belting.
(See Belting—Leather.)

Linen Yarns.
(See Yarns—Linen.)

Link Belting.
(See Belting—Link.)

Liquid Chlorine.
(See Chlorine.)

Loaders (Wagon and Truck).
Link-Belt Company.

Logwood Extract.
(See Dyestuffs and Chemicals.)

Looms.
Crompton & Knowles Loom Wks.
Draper Corp.
Saco-Lowell Shops.
Schofield, Wm. & Co.
Stafford Co., The

Loom Harness Straps.
Graton & Knight Mfg. Co.

Lubricants.
Dixon, Jos., Crucible Co.
Floto Mica Sales Co.
Kellogg & Co., E. H.
N. Y. & N. J. Lubricant Co.

Lug Straps.
(See Straps—Lug.)

Lumber.
Salkeld, A. D. & Bro.

Marking Pots, Stencils, Ink, Etc.
(See Ink—Stencil.)

Measuring Machine (Cloth).
Elliot & Hall.
Windle, J. E.

Mercerized Yarns.
(See Yarns Mercerized.)

Mercerizers.
Aberfoyle Mfg. Co.
Home Bleach & Dye Works.

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Wolf & Co., Jacques.

Meters—Revolution, Etc.
(See Counters.)

Meters (Flow, Air, Gas, Steam).
Allis-Chalmers Mfg. Co.
General Electric Co.
Lincoln Electric Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Mill Baskets and Boxes.
(See Boxes—Mill.)

Mill White Paint.
(See Paint—Mill White.)

Millwrights.
Hunter Mch. Co., Jas.

Motors and Generators (Electric).
Allis-Chalmers Mfg. Co.
General Electric Co
Lincoln Electric Co.
Seeger-Walraven Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Mule Stands.
Transmission Ball Bearing Co.

Napping Machinery.
Leigh & Butler.

Office Supplies, Furniture, Etc.
Baylis Office Equip. Co.

Oils—Finishing.
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Openers for Cotton, Wool, Waste Etc.
Leigh & Butler.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Oxidizing Machinery.
Phila. Drying Machinery Co.

Oxygen.
Bird Wilcox Co.
Prest-O-Lite Co.

Packings—Leather.
Graton & Knight Mfg. Co.

Packings—Rubber.
Goodrich Co., B. F.

Paint.
Barrett Co., The.
Chaffee, Thos. K.
General Roofing Mfg. Co.
Ullman-Philpott Co.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Paint—Fireproof.
General Roofing Mfg. Co.
High Grade Mfg. Co.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Paint—Mill White.
Chaffee, Thos. K.
Ullman-Philpott Co.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Perforated Metal.
(See Screens and Sieves.)

Photographer of Mills.
Shutting Co., Rudolph J.

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Pickers—Curled Hair.
Schofield, Wm. & Co.
Smith & Furbush Mach. Co.

Picker Housings.
Hubbard Mch. Co.

Pickers—Leather.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

Picker Sticks.
Garland Mfg. Co.

Pipe Threading & Cutting Machines
Seeger-Walraven Co.

Power Companies.
(See Central Stations.)

Power Transmission.
Allis-Chalmers Mfg. Co.
American Pulley Co.
Bound Brook Oil-less Bearing Co.
Cork Insert Co.
Excelsior Pulley Co.
Freadrich Belting Co.
General Electric Co
Graton & Knight Mfg Co.
Goodrich Co., B. F.
Hunter Machine Co., Jas.
Link-Belt Company.
Seeger-Walraven Co.
S. K. F. Ball Bearing Co.
Textile Specialty Co.
Transmission Ball Bearing Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.
West Point Iron Works.

Press Papers.
Diamond State Fibre Co.
Phila. Drying Machinery Co.

Presses.
American Laundry Mchy. Co. The
Butterworth & Sons Co., H. W.
Economy Baler Co.
Phila. Drying Machinery Co.
Reliance Machine Works.
Seeger-Walraven Co.
Smith, Drum & Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co. The

Pulleys.
American Pulley Co.
Cork Insert Co.
Excelsior Pulley Co.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.
West Point Iron Works.

Pulleys (Cork Insert).
American Pulley Co.
Cork Insert Co.

Pulley Covering.
Freaderich Belting Co.
Graton & Knight Mfg. Co.

Pumps.
Allis-Chalmers Mfg. Co.
Collins, J. D.
Seeger-Walraven Co.
Textile Finishing Machinery Co., The
Toomey, Frank.
Walsh & Weidner Boiler Co.
Westinghouse Elec. & Mfg. Co.

Racks—Metal.
Manufacturers Equip. & Eng. Co.

Railings.
Chattanooga Iron Works.
Dufur & Co.

Railways—Industrial.
(See Trucks—Electric.)

Railways.
Southern Railway.
A. & W. P. Railway.
Central of Ga. Railway.
Georgia Railroad.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reels.
Crompton & Knowles Loom Wks.
Draper Corp.
Saco-Lowell Shops.
Schofield Co., Wm.

Repairing (Textile of all kinds).
General Machine Works.
Greenville Iron Works.
Hubbard Mch. Co.

Rewinding Machines.
Windle, J. E.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co

Ring Travelers—Steel and Bronze.
Union Mfg. Co
Whitinsville Spinning Ring Co.

Rings—Spinning.
(See Spinning Rings.)

Rocker Shaft Bearings.
(See Bearings.)

Rolls—Steel.
Southern Spindle & Flyer Co.

Roller Covering.
Goodrich Co., B. F.
Graton & Knight Mfg. Co.

Roofing.
Barrett Co., The.
Cortright Metal Roofing Co.
General Roofing Mfg. Co.

Roof and Cement Coating.
General Roofing Mfg. Co.
High Grade Mfg. Co.
Wadsworth, Howland & Co., Inc.

Rope—Transmission.
Hunt Co., C. W., Inc.
Hunter Mch. Co., Jas.
Link-Belt Company.

Roving Cans & Trucks.
(See Cans—Roving.)

Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops.

Rubber Products.
Goodrich Co., B. F.

Rubber Stamps.
(See Stamps, Stencils, Etc.)

Saddles and Stirrups.
Dixon Lub. Saddle Co.

Saddles—Oil-less.
Bound Brook Oil-less Bearing Co.

Scales—Automatic.
American Kron Scale Co.
National Scale Co.
Toledo Scale Co.

Screens & Sieves (Perforated)
Erdle Perforating Co.
Link-Belt Company.

Screws (Safety Set).
Allen Mfg. Co.

Searchlight (Industrial).
Western Electric Co.

Second Hand Machinery.
Seeger-Walraven Co.
Toomey, Frank.

Sewing Machines.
Merrow Machine Co., The.
Textile Finishing Mchy. Co.
Willcox & Gibbs Sewing Mch. Co.

Shaftings & Hangers.
S. K. F. Ball Bearing Co.
Seeger-Walraven Co.
Transmission Ball Bearing Co.
West Point Iron Wks.

Shafting Rings.
Graton & Knight Mfg. Co.

Shelving—Sectional Steel.
Manufacturers Equip. & Eng. Co.
National Scale Co.

Shift Plates for changing over Rings.
Union Mfg. Co.

Shingles—Asphalt.
General Roofing Mfg. Co.

Shingles—Metal.
Cortright Metal Roofing Co.

Shuttles.
Crompton & Knowles Loom Wks.
Draper Co.
Shambow Shuttle Co.

Farbwerke-Hoechst Company

FORMERLY

H. A. METZ & CO. - - - 122 Hudson Street, New York City

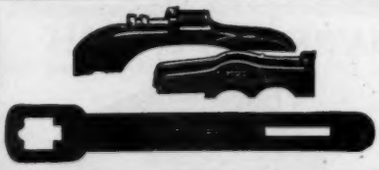
ANILINE COLORS ALIZERINE COLORS HELINDONE COLORS
INDIGO M L B TEXTILE CHEMICALS

Boston, 140-142 Oliver St. Atlanta, 1418 Empire Bldg.

Philadelphia, 104 Chestnut St. Chicago, 317 N. Clark St.

Providence, 23 S. Main St. San Francisco, 20-22 Natoma St.

Charlotte, 210 S. Tryon St. Montreal, 45 Alexander St.



DIXON LUBRICATING SADDLE CO., Bristol, R. I.

SOLE MANUFACTURERS OF

Dixon Patent Locking and Stirrup Adjusting Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long stapled cotton is used. The stirrup is always in place. No bent stirrup resting on rolls. Manufacturers of all kinds of saddles, stirrups and levers. Send for samples and prices. Spinners' Supplies in General.

Leigh & Butler

232 Summer Street, Boston, Mass.

Sole Agents in the United States and Canada for Platto Bros. & Co., Cotton Machinery.

COMPLETE MILL EQUIPMENT

Patent Barchant Machinery for Making Yarn from Cotton Waste, Etc.

BALING PRESSES

ALL STEEL ECONOMY FIRE PROOF

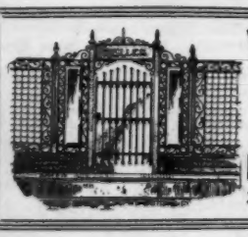
FOR ALL PURPOSES

Largest Line in the U. S.

Write

ECONOMY BALER COMPANY,

Dept. C., Ann Arbor, Mich.

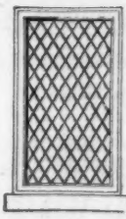


WIRE RAILINGS WINDOW GUARDS WIRE CLOTH.

Established 1835.

DUFUR & CO.

309 N. Howard St., Baltimore, Md.



THE CHATTANOOGA IRON WORKS

16th and Cowart Sts., CHATTANOOGA, TENN.

Manufacturers of
ORNAMENTAL IRON AND BRONZE WORK
Wire Window Guards, Wire Railings, etc.

STENCILS

FOR COTTON SHIPPERS, COTTON MILLS, MERCHANTS & MANUFACTURERS - ALSO BRUSHES, INK, MARKING POTS.

RUBBER STAMPS, NOTARIAL AND CORPORATION SEALS

ATLANTA RUBBER STAMP & STENCIL WORKS

OFFICE 33 LUCKIE ST. WORKS: 350 EDGEWOOD AVE.

P.O. BOX 834 OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA, GA.

Best Grade Renewed Lamps

Both Carbon and Tungsten Types

We guarantee you most for the money

BOSTON ECONOMY LAMP DIVISION

National Lamp Works of General Electric Co.

MAPLE ST. DANVERS, MASS.

BUYERS' INDEX—Continued.

Singeing Machinery.
Butterworth & Sons Co., H. W
Phila. Drying Machinery Co.
Smith, Drum & Co.
Textile Finishing Machinery Co., The.

Size Kettles.
Allen Sons Co., Wm.
Butterworth, H. W. & Sons Co.
Howard & Bullough, American Machine Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.
Worcester Steam Boiler Wks.

Sizing and Finishing Compounds.
(See Finishing & Sizing Materials.)

Size System.
Keever Starch Co.
Seydel Mfg. Co.
Wolf & Co., Jacques.

Skewers.
Jordan Mfg. Co.

Slag.
Birmingham Slag Co.

Slashers.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Saco-Lowell Shops.
Salem Iron Works.
Textile Finishing Machinery Co., The.

Slasher Tape—Gummed.
Papco Paper Products Co.

Slate Asphalt Roofing.
General Roofing Co.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.

Soaps.
American Soap & Washoline Co.
Baltic Chemical Co.
Brown & Bro., B.
Chemical Co. of America.
Electric Smelting & Aluminum Co.
Madero Bros.
Marden, Orth & Hastings Co.

Soda (Textile).
Baltic Chemical Co.
Brown & Bro., B.
Chemical Co. of America.
Cone, Frederick H.
Madero Bros.
Marden, Orth & Hastings Co.

Softeners—Cotton.
American Soap & Washoline Co.
Aberfoyle Mfg. Co.
Arabol Mfg. Co.
Baltic Chemical Co
Bosson & Lane
Brown & Bro., B.
Chemical Co. of America.
Kali Mfg. Co.
Madero Bros.
Marden, Orth & Hastings.
Phoenix Dye Products Corp.
Seydel Mfg. Co.
Southern Chemical Lab.
Standard Aniline Products, Inc.
Wolf & Co., Jacques.

Softeners—Water.
(See Water Softeners.)

Spindles.
Draper Company.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Spindles—Ball Bearing.
Chapman Mfg. Co.
Draper Company.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Machine Co.

Spinning Rings.
Draper Corp.
Howard & Bullough.
Union Mfg. Co.
Whitinsville Spinning Ring Co.

Spinning Tape Specialists.
American Textile Banding Co., Inc.
Barber Mfg. Co.

Spooling Machinery.
Draper Company.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

Spot Remover—Cotton.
Southern Chemical Laboratory.

Spray Water Cooling System.
Spray Eng. Co.

Sprinkler Tanks.
(See Tanks, Towers, Etc.)

Sprocket Wheels.
Link-Belt Company.

Stamps, Stencils and Stencil Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Dixie Seal & Stamp Co.

Stand Pipes.
(See Tanks, Towers, Etc.)

Starch & Gums.
Corn Products Refining Co.
Keever Starch Co.
Seydel Mfg. Co.
Wolf & Co., Jacques.

Steam Engines.
(See Engines—Steam.)

Steam Hose.
(See Hose—Steam.)

Steam Pumps.
(See Pumps—Steam.)

Steam Traps.
(See Traps—Steam.)

Stop Motion.
Crompton & Knowles Loom Wks.
Draper Company.
Wildman Mfg. Co.

Straps—(Lug).
Freadrich Belting Co.
Goodrich Co., B. F.
Graton & Knight Mfg. Co.

Tachometers.
The Foxboro Company.
Veeder Mfg. Co.

Tallow.
(See Finishing Material.)

Tanks, Towers and Tubs.
Allen Sons Co., Wm.
Casey-Hedges Co.
Chicago Bridge & Iron Works.
Lombard Iron Works & Supply Co.
Phila. Drying Machinery Co.
Salem Iron Works.
Textile Finishing Machinery Co., The.

Tape and Tape Moistening Machine for Slashers.
Papco Paper Products Co.

Tapes and Braids.
American Textile Banding Co., Inc.
Barber Mfg. Co.
Weimar Brothers.

Telephones—Inter.
National Scale Co.

Temples.
Draper Company.

Tenters.
Butterworth & Sons Co., The.
Textile Finishing Mach. Co.

Thin-Place Preventers.
Clayton & Bentley.
Draper Company.

Thread Guides.
Palmer Co., The I. E.

Tiering Machines.
Collins, J. D.

Toilets.
Cement Products Co.
Dixie Culvert & Metal Co.
Sanitary Products Corp.
Selig Co., The
Vogel Co., Jos. A.

Transmision (Power).
(See Power Transmission Machinery.)

Traps (Return Steam).
Morehead Mfg. Co.

Travelers—Floating.
Union Mfg. Co.

Trucks—Auto.
Federal Motor Truck Co.
Lewis-Hall Iron Works.

Trucks—Electric—Inter.
Automatic Transportation Co.
Hunt Co., C. W.

Trucks—Elevating—Inter.
Hunt Co. C. W.
National Scale Co.

Trucks—Mill, Inter-Transportation.
Columbus Truck & Supply Mfg. Co.
Diamond State Fibre Co.
Fibre Specialty Co.
Hunt Co., C. W.
Keystone Fibre Co.
Lane & Bro., W. T.
Leatheroid Mfg. Co.
Standard Fibre Co.

Tubes—Cloth Protecting.
Southern Novelty Co.

Turbines (Steam).
Allis-Chalmers Mfg. Co.
General Electric Co.
Seeger-Walraven Co.
Western Electric Co.
Westinghouse Elect. & Mfg. Co.

Twisting Machinery.
Draper Company.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

Valves—Rubber.
Goodrich Co., B. F.

Valves—Steam, Ammonia, Water, Etc.
Foster Engineering Co.
Seeger-Walraven Co.
Toomey, Frank.

Varnishes.
Ullman-Philpott Co.
Wadsworth, Howland & Co.
Wolf Paint Co., Leon L.

Ventilating Apparatus.
Carrier Eng. Corp.
Cramer, Stuart W.
General Electric Co.
Howard & Morse.
New York Blower Co.
Ohio Blower Co.
Sargent's Sons Co., C. G.
Tolhurst Mch. Co.
Western Electric Co.

Warp Tying Machines.
Barber-Colman Co.

Warpers and Warping Machinery.
Cocker Machine & Fdry Co.
Columbus Truck & Mfg. Co.
Crompton & Knowles Loom Wks.
Draper Corp.
Howard & Bullough.
Saco-Lowell Shops.
Salem Iron Works.
Smith & Furbush Mach. Co.

Washers (Cloth).
American Laundry Machinery Co. The
Butterworth, H. W & Sons Co.
Cocker Mch. & Foundry Co.
Hunter Mch. Co., Jas.
Philadelphia Drying Mchy. Co.
Phila. Textile Mchry. Co.
Salem Iron Works.
Textile Finishing Mchry Co.

Washers, Graphite and Bronze.
Bound Brook Oil-less Bearing Co.

Washers, Leather.
Graton & Knight Mfg. Co.

Washers—Rubber.
Goodrich Co., B. F.

Washers, Wooden, Oil-less.
Bound Brook Oil-less Bearing Co.

Waste Machinery (Cotton).
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Sargent's Sons Co., C. G.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Water Cooling Ponds.
(See Cooling.)

Water Softeners.
Chicago Bridge & Iron Works.
Refinite Co., Inc.
Scaife & Sons Co., Wm. B.

Waterproofing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co. The

Weaving.
Aberfoyle Mfg. Co.

Welding Apparatus (Electric Arc).
Lincoln Electric Co.
Westinghouse Elec. & Mfg. Co.

Welding Apparatus (Oxy-acetylene)
Bird-Wilcox Co., Inc.
Prest-O-Lite Co.

Welding—Job.
Bird-Wilcox Co., Inc.

Wheels—Fibre.
Diamond States Fibre Co.
Fibre Specialty Co.
Keystone Fibre Co.
Leatheroid Mfg. Co.
Standard Fibre Co.

White Way Posts.
Greenville Iron Works.

Winding.
Aberfoyle Mfg. Co.
Home Bleach & Dye Works.

Winders.
Crompton & Knowles Loom Wks.
Elliot & Hall.
Firsching, J. A.
Howard & Bullough, American Machine Co.
Leigh & Butler.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Stafford Co., The
Windle, J. E.

Windows—Wire
Chattanooga Iron Works.

Wire Glass.
(See Glass—Wire.)

Wood Preserver.
General Roofing Mfg. Co.
Lyster Chemical Co.
Wadsworth, Howland & Co.
Wolf Paint Co., Leon L.

Wood Pulleys.
Excelsior Pulley Co.

Woolen Machinery.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Wks.
Draper Corp.
Hunter Mch. Co., Jas.
Leigh & Butler.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Phila. Textile Machinery Co.
Sargent' Sons Corp., C. G.
Stafford Co., The
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co. The

Yarns.
Aberfoyle Mfg. Co.
Hughes, Fawcett.
Paulson, Linkroum & Co.

Yarns—Linen.
Hughes, Fawcett.

Yarns (Mercerized).
Aberfoyle Mfg. Co.

Yarns—Turkey Red.
Hughes, Fawcett.

SEYDEL MANUFACTURING COMPANY
JERSEY CITY

SIZOL

Makes the Strongest, Smoothest Warps; the Best Cloth and Least Seconds.

SIZOL TRADE-MARK

Southern Representatives:
S. C. Thomas
George Witherspoon
Spartanburg, S. C.

ACME

BALE TIES and BUCKLES

Painted Galvanized Bright No. 4 Acme U Buckle

Mfrs. of Steel Box Strapping and Steel Door Mats

ACME STEEL GOODS CO., Mfrs.

WORKS: CHICAGO, ILL. Stocks carried in New York City and Atlanta, Ga.

Your **Rubber Stamp, Stencil** and **Ink** items may be small—but, you want these properly made—and usually want them "in a hurry."

There are 15 people in our establishment—we all work together to serve our customers. You can depend on having your orders filled Promptly and Properly.

Metal
CHECKS
BADGES
PLATES

DIXIE SEAL & STAMP CO. ATLANTA

All Kinds
SEALS
STAMPS
STENCILS

HERE IS IRREFUTABLE PROOF

The three highest buildings in the world—Metropolitan Life Bldg., Woolworth Bldg., and Singer Bldg.—have installed

BLACKMAN VENTILATORS

Could any stronger proof of their superiority be given than selection by the most prominent Architects? Send for our catalog, giving names of hundreds of other prominent buildings equipped with Blackman Ventilators.

HOWARD & MORSE,
45 Fulton St., New York.

Bradley Stencil Machine

The BRADLEY STENCIL MACHINE
Makes Stencils in half a minute, at reduced cost of 1-10c each
Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

A. J. BRADLEY Gen. Sales Agent 101 Beekman Street, New York, U.S.A.

Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 30c or $3.00 per doz. Manufacturers of Oil Stencil Papers.

Write for Prices and Samples.

A. J. BRADLEY MFG. CO.

99 Beekman Street, NEW YORK

ANTI-CORROSIVE CYLINDER OIL

TRY A BARREL FOR 60 DAYS

If it does not come up to your standard of what a good lubricating oil should be, and you consider that it is not worth our price—put your own value on it and remit on that basis. Isn't that a fair proposition? "A. C. C." will pare down your oil and cylinder repair bills—save your piston packing, too. It has been doing this for forty years, it will effect such a saving now—just give "A. C. C." a chance.

May we go into the subject with you?

ANTI-CORROSIVE CYLINDER OIL MANUFACTURED ONLY BY E. H. KELLOGG & CO. NEW YORK

E. H. KELLOGG & CO.
243 SOUTH ST. NEW YORK

ANTI-FRICTION LUBRICANT FLOTA MICA TRADE MARK

COMES IN 5, 10, AND 25 POUND CANS.

WILL REDUCE YOUR OIL AND GREASE BILLS

and cool any hot bearing without slowing down the machinery

An ounce of Flota Mica in a gallon of oil or a pound of grease will reduce the friction load throughout your mill from the main engine to the textile finishing machinery.

Flota Mica permits of the use of cheaper oils and gives better results than you are now getting. Many concerns have cut their oil bills in half.

Flota Mica will not cake or harden, nor will it stop up the finest oil grooves.

Write for full information and service data.

Flota Mica Sales Co., 214 Moffatt Bldg., Detroit, Mich.

AGENTS:—A. H. Carriers, Security Bldg., St. Louis, Mo.; V. A. Moore, 1504 Healy Bldg., Atlanta, Ga.; H. W. Nickel, 1265 Broadway, Room 411, New York City.

NEW AND SECOND HAND MACHINERY IN STOCK FOR IMMEDIATE DELIVERY

F. O. B. ATLANTA

NEW MACHINES

2—16-inch by 8-foot South Bend Engine Lathes.
1—15-inch by 8-foot South Bend Engine Lathe.
1—13-inch by 5-foot South Bend Engine Lathe.

1—1⅛-inch Landis Bolt Cutter.

1—11-inch by 5-foot Seneca Falls motor driven wood lathe.

Complete stock Emery Grinders with stand and countershaft.

Air Compressors and Receivers (all sizes).

6—20-inch Plain Drill Presses.
6—20-inch Back Geared Drill Presses.
1—22-inch Aurora Upright Sliding Head Drill Press.
1—24-inch Aurora Upright Sliding Head Drill Press.
1—10-inch sensitive bench Drill Press.

1—No. 4 Greenerd Arbor Press.
1—No. 14 Greenerd Arbor Press.
1—20-ton Weaver Arbor Press.

2—No. 1 Marvel Power Hack Saws.
1—No. 2 Marvel Power Hack Saw.
1—No. 5 Marvel Automatic Power Hack Saw.

Imperial Welding and Cutting Outfits.

Lathe and Drill Press Chucks in assorted sizes.

Gasoline and Oil Engines (all sizes).

SECOND HAND MACHINES IN GOOD CONDITION

1—20-inch by 12-foot Lathe.
1—16-inch by 8-foot Lathe.
1—13-inch by 10-foot Sebastian Lathe with raising blocks.

1—24-inch Aurora Upright Sliding Head Drill Press with tapping attachment.
1—20-inch Aurora Drill Press.

Also a complete stock of Mill Supplies and Small Tools.

Can make prompt deliveries on the above subject to prior sale.

SEEGER-WALRAVEN COMPANY

MACHINERY AND MILL SUPPLIES

38 West Alabama Street, ATLANTA, GEORGIA

WE CAN EQUIP YOU—WRITE US.

The American Audit Co.

F. W. LAFRENTZ, C. P. A., Pres. Telephone Main 872
THEO. COCHEU, Jr., C. P. A., Vice Pres. Cable Address
A. F. LAFRENTZ, Secy. & Treas. Amdit New York

NEW YORK—100 Broadway (Home Office)
33rd St. and 5th Ave., Waldorf-Astoria.
ATLANTA BRANCH—1013-1017 4th National Bank Building.
CHICAGO—Marquette Building.
BOSTON—Exchange Building.
PHILADELPHIA—Bellevue Stratford.
BALTIMORE—Keyser Building.
WASHINGTON, D. C.—Colorado Building.
NEW ORLEANS—Maison Blanche.
SAN FRANCISCO—Mills Building.
RICHMOND, VA.—American National Bank Building.
LONDON, E. C.—50 Gresham St., Bank.
MILWAUKEE—Plankinton Bank Building.
SCRANTON—Title Building.

Specialists in Cost Systems and Manufacturing Accounts.

C. B. BIDWELL, C. P. A., Resident Vice-President

Shafts, Pulleys, Hangers, Belting, Packing, Lacing,

BOILERS

For Mills and Public Works, Low Prices.

Refer Chadwick, Hoskins, Woodside, Chiquola, Sibley, King, Enterprise, Langley, Piedmont and Pelzer Mills.

High Pressure Boilers built to Insurance Specifications. Rivet Holes Punched or Drilled. Pumps, Injectors, Pipe Mill Supplies, Castings.

LOMBARD

Foundry, Machine, Boiler Work, and Supply Store,
AUGUSTA, GEORGIA

J. E. SIRRINE,

Mill Architect and Engineer

Specialty

Textile Mills and Water Power Developments

GREENVILLE, S. C.

PERFORATED METALS

FOR ALL PURPOSES

Such as Cotton Seed Oil Mills, Cotton Gins, Phosphate Screens, Coal Screens, Ventilation, Electrical Devices, Sugar Mills, Surfacing for Sand Rolls.

Send for Metal Sample Plate and Circular.

ERDLE PERFORATING CO.

163 YORK ST., ROCHESTER, N. Y.

The U. S. Dept. of Agriculture says

"In the United States about 400,000 persons suffer from and about 35,000 die from typhoid each year; over 2,000,000 persons have hook-worm disease. Thousands of these deaths and many thousands of these cases of disease might be prevented by the simple use of sanitary privies.

"Flies and many other insects feed upon and breed in filth such as manure and human excrement. Thus it is clear that if flies are kept away from human excrement, not only will they decrease in numbers, but they will be prevented from spreading certain diseases, such as typhoid fever. This can be done by the use of sanitary privies."

Protect the Health of Your Employees and the Community with

SANI-KLOSIT

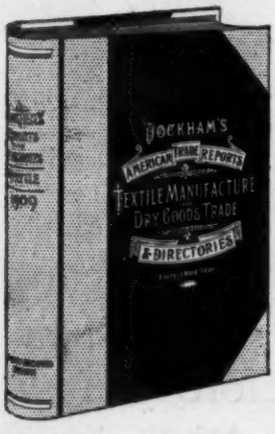
The Modern Sanitary, Fly-Proof Out-Door Closet

Drop us a line and we will gladly send further information.

The Sanitary Products Corporation

Baltimore

"The Standard"



Honorable Mention, Paris Exposition, 1900
Gold Medal, Lewis and Clark Centennial 1905

ESTABLISHED 1866.

JUST ISSUED

50th (Golden) Anniversary Number

25th EDITION

DOCKHAM'S

AMERICAN TEXTILE REPORT & DIRECTORY

United States and Canada.

All the New Mills Over 20,000 Changes Do You Know Them All?

If You Want the Most COMPLETE, ACCURATE and RELIABLE Textile Report and Directory You Need this New Book. Not only the Oldest, but, as always, the Biggest and Best. THE BOOK THE TEXTILE MILLS USE.

CONTENTS

Cotton, Woolen, Worsted Carpet, Hosiery, Knit Goods, Silk, Shoddy, Linen, Jute, Flax, Waste and Wool Hat MANUFACTURERS.
Bleacheries, Print Works, Dyers and Finishers. Mercerizers.
Converters of Cotton Goods.
Yarn Dealers—Commission, Importers, Brokers, etc.
Cotton Dealers—Merchants, Factors, Buyers, Com., Importers, Exporters, Brokers, etc.
" " —Liverpool, England; Bremen, Germany; Havre, France.
Wool Dealers—Buyers, Commission, Brokers, Pullers, Scourers, etc.
Waste Dealers—Cotton, Wool.
Dry Goods—Commission, Mfrs'. Agents. Wholesale **Jobbers**, Importers, etc.
Agencies and Offices of Manufacturing Companies in Boston, Providence, New York and Philadelphia.
Directors of many of the leading incorporated companies.
Textile Associations—Also interesting and valuable data relating to the great industry represented.
Full detailed report of all the mills. Book sent express prepaid on receipt of price, Six ($6) dollars.

SPECIAL ADDITIONAL CONTENTS

This Anniversary Number contains a reprint of all Textile Mills fifty (50) years ago, as printed in our 1st Edition; EXPORTERS of Textiles, Dry Goods, Etc.; also extra Statistical Tables, making it more than ever, **the** book for the **Textile Mill, Office and Library.**

DOCKHAM PUBLISHING CO., 6 Beacon St., BOSTON, MASS., U. S. A.

SICKNESS DECREASES YOUR PROFITS

You can prevent much of your employees' sickness.

The unsanitary surface closets in your mill town cause a large percentage of the sickness of your employees. Sickness causes loss of time, **loss of efficiency—loss of profits.**

Install a Septic Tank beneath each closet and insure your workmen's efficiency—and your profits. These are made of Rust Resisting Armco Iron—therefore they are long lived.

These Septic Tanks are inexpensive and they pay large dividends.

Send for literature and prices.

THE DIXIE CULVERT & METAL CO.

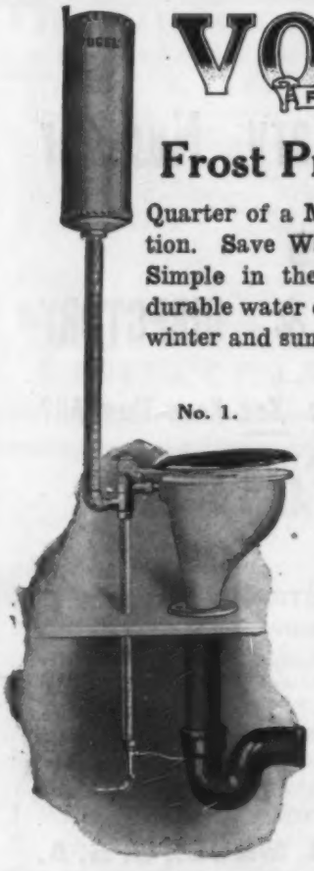
ATLANTA, GA.

VOGEL

PATENTED

Frost Proof Closets

Quarter of a Million giving satisfaction. Save Water; Require No Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.



No. 1.

- Enameled roll flushing rim bowls.
- Heavy brass valves.
- Strong hardwood seat.
- Galvanized tank.
- Malleable seat castings will not break.
- Tested under hydraulic pressure before leaving factory.

SOLD BY JOBBERS EVERYWHERE.

JOSEPH A. VOGEL CO.

WILMINGTON DELAWARE

WHEN you buy from advertisers you buy from concerns who put their claims before you *in writing*. Advertising Buying, in other words, is Safe Buying.

Why Pay More Than For a Sanitary Closet $3.00

You can fly proof each one of your privies—prevent disease—guard against soil and water pollution, and increase the efficiency of your operatives for less than the cost of lard tub containers or boxes.

You need no running water—no plumbing— no fixtures—no "expert" high priced labor to install the

STEVENS SANITARY CLOSET CAN

and it works continually and uninterruptedly from four to six years without expense for paint or repair of any kind.

THE STEVENS CAN IS AN ECONOMY IN YOUR MILL VILLAGE IF YOU WILL USE IT and IT alone—without screens, vaults, or special equipment or buildings. It is GUARANTEED FLY PROOF AND SANITARY.

Why tolerate expensive, cumbersome equipment—why worry over days and weeks of torn up, dismantled buildings—why pay more than $3.00 to make your surface closets as sanitary—as fly proof—as efficient as they can be made—by any method—or any device—under any name—at any price!

THE STEVENS CAN is quickly installed and easy of access for cleaning. It will not absorb odors—go to staves—rot—burst from freezing or clog. Rain can't spatter contents and pollute soil or water.

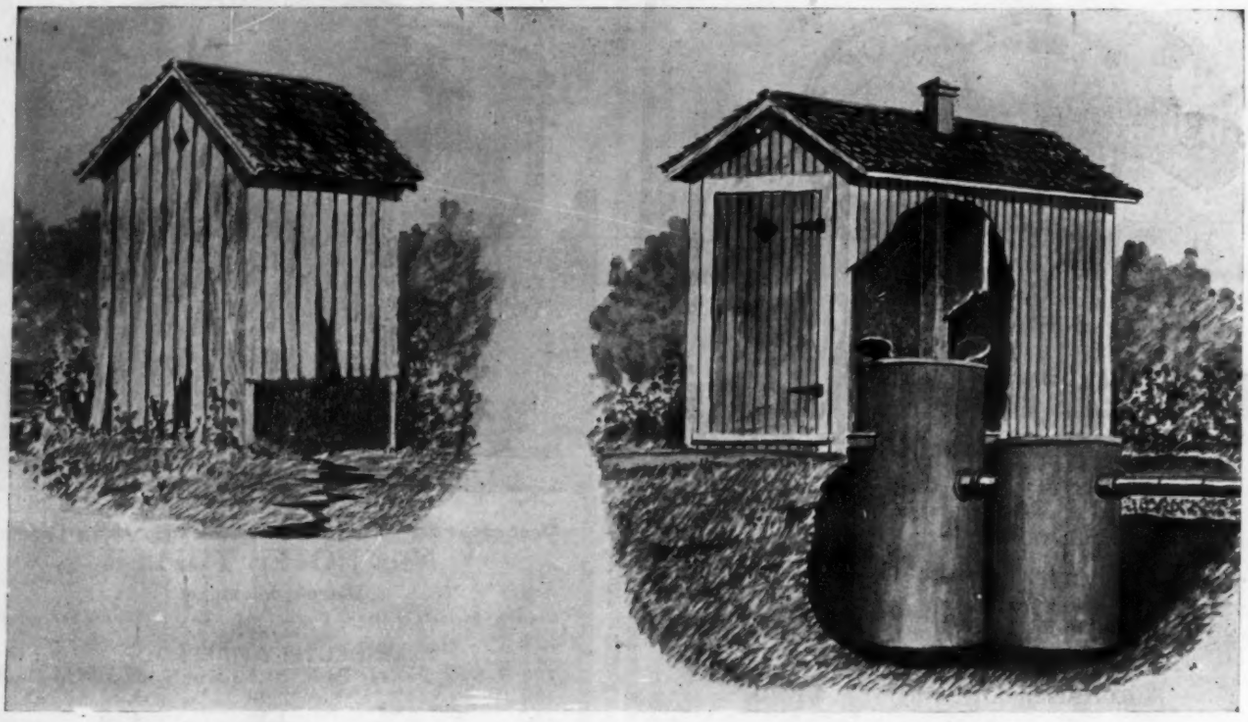
It is the solution to your surface closet problem. Then why not buy it TODAY—or if you doubt these facts give a few of the Cans a trial till you can see how they work.

A postal will bring proofs of our statements, or a trial shipment of Stevens Cans. Write today.

THE SELIG CO. DISINFECTANTS AND SANITARY PRODUCTS

SELIG COMPANY, of TEXAS
Western Distributors
DALLAS, TEXAS

ATLANTA, GA.



Soil pollution and disease originate here.

Patented.

No. 2 "SANISEP" System with partition, for two houses.

WHICH IS YOUR MILL VILLAGE EQUIPPED WITH?

CEMENT PRODUCTS COMPANY, Wilmington, N. C. Manufacturers of "SANISEP" Tanks.

Hotel Lenox

THE Lenox has long been famed as a hotel where guests are made to feel at home. If you ever visit aristocratic old Boston, make the Lenox your rendevous and you'll enjoy your stay.

It is situated within a short distance of the business, shopping and theatre districts, and is in close proximity to all railroad stations.

Single Room with Bath
$2.50 to $4.00
Double Rooms with bath
$3.50 to $5 00

L. C. PRIOR,
Managing Director.

Boston

MAKE YOUR ARRANGEMENTS EARLY
FOR THE ANNUAL
CONVENTION and EXHIBITION
OF THE

NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS

PHILADELPHIA, PA.
May 7, 8, 9, 10 and 11, 1917
TO BE THE GREATEST EVER
Many New Exhibits Provided For.
More Space Already Reserved and Paid For Than Ever Before Occupied.
Desirable Locations Still to Be Had. Come Early For the Best.

EXHIBITION 120,000 Square Feet Available, affording space for all interests cultivating the Knitting Trade.

A complete working mill exhibit—all operations—a special feature. Large and varied exhibits of knitted goods in all lines will be shown for the benefit of jobbers, retailers and the general public, as well as for American Exporters and Foreign Buyers.

Ask C. B. Carter, Secretary, 425 Chestnut St., Philadelphia, Pa., for detailed information, etc.

IN THE HEART OF THINGS

The House of Taylor

600 Rooms
400 Baths

HOTEL MARTINIQUE

Broadway, 32d St., New York

125 pleasant Rooms, with private bath, facing large, open court,
$2.50 PER DAY

157 excellent Rooms, with private bath, facing street, southern exposure,
$3.00 PER DAY

Also Attractive Rooms from **$1.50**

The restaurant prices are most moderate. Equally convenient for amusements, shopping or business. One block from Penn'a Station.

Meet me at the Tuller for Value, Service, Home Comfort

New HOTEL TULLER

Detroit, Michigan.

Center of business on Grand Circus Park. Take Woodward car, get off at Adams Avenue.

ABSOLUTELY FIREPROOF

200	Rooms,	Private	Bath,	$1.50	Single,	$2.50	Up	Double
200	"	"	"	2.00	"	3.00	"	"
100	"	"	"	2.50	"	4.00	"	"
100	"	"	"	3.00 to 5.00	"	4.50	"	"

Total 600 Outside Rooms.

ALL ABSOLUTELY QUIET

Two Floors—Agents' Sample Rooms

New Unique Cafes and Cabaret Excellente

The West Point Route

A. & W. P. R. R. Co. The W. Ry. of Ala.

to

California, Texas, Mexico and the West.

CHEAPEST RATES

3——Trains Daily——3

Call at City Ticket Office, No. 80 Peachtree Street, or write for fares and full information.

J. P. BILLUPS,

General Passenger Agent, Atlanta, Ga.

Proper Locations for Cotton Mills.

United States Census figures show that since 1880 the consumption of cotton in mills of the cotton growing states has increased 1,502 per cent, as compared with an increase of only 93 per cent in all other states. In the twelve months ended August 31, 1916, Southern mills consumed 675,731 more bales of cotton than the mills of all other states. Three-fourths, or 9,000,000, of the total cotton spindles in the cotton growing States are tributary to Southern Railway tracks. Of the 200 knitting mills in the South over 125 are located along the Southern Railway. All the Southern woolen and silk mills are also on Southern Railway tracks.

There is a reason for this, and it is not difficult to understand.

The Southern Railway Lines enter and serve most completely those portions of the South where the textile industry is the greatest success, because there are found all the conditions which make for successful manufacture—the proper transportation facilities, the ease with which the raw materials and the needed fuel may be secured, the supply of good labor, the pure water, the low cost of power, and favorable local conditions.

Not only for textile plants but for all other industries the best advantages will be found in this territory.

If you have a plant to locate let us take up with you the question of the proper location. Your plans will be held confidential. Our knowledge of conditions at various points and our experience in locating other mills and the time of our agents in making special investigations are at your service, if desired.

M. V. RICHARDS
ROOM 131
Industrial and Agricultural Commissioner,
SOUTHERN RAILWAY, Washington, D. C.

Georgia Railroad

EFFICIENT AND RELIABLE

Passenger and Freight Route

Ample Train Service and good connections.

Elegant road bed and superb equipment.

Special Fares for special occasions very often in effect.

Ask the Georgia Railroad Agent for rates and schedules.

J. P. BILLUPS

General Passenger Agent, Atlanta, Ga.

TO THE

Manufacturer and Distributor

Abundant supplies of coal, coke, iron, timber and other raw materials lie in the regions of Georgia and Alabama which are traversed by the

Central of Georgia Railway

Cheap electric power, numerous undeveloped waterpowers, good home markets and excellent shipping facilities. Therefore, manufacturing conditions are ideal.

Many of the cities on the Central of Georgia Railway occupy advantageous positions for distributing warehouses and a number of the larger northern and eastern manufacturers supply their southeastern trade from branch houses in these cities.

Full and detailed information upon application

J. M. Mallory, Industrial Agent
Savannah, Ga.

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Etc.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
COTTON AND WORSTED YARNS
366 BROADWAY Cor. Franklin St. NEW YORK
DEPT. FRED'K VIETOR & ACHELIS.

WOODWARD, BALDWIN & CO.
DRY GOODS
COMMISSION MERCHANTS
43-45 WORTH STREET, NEW YORK

HAVE THAT SAFE FEELING
When buying products advertised in COTTON, you can always have that safe feeling that each advertiser is reliable and lives up to the claims made in his advertisement.

PAULSON, LINKROUM & CO.
COMMISSION MERCHANTS
COTTON YARNS
PHILADELPHIA NEW YORK CHICAGO

Amory, Browne & Co.
Boston New York
SELLING AGENTS FOR
Nashau Manufacturing Company
Indian Head Mills Alabama
Samuel A. Crozier & Son
Lancaster Mills
Jackson Company
Parkhill Manufacturing Company
Wauregan Company
Lowe Manufacturing Co.
Quinebaug Company
B. B. & R. Knight (Export only)

ESTABLISHED 1872
H. & B. BEER
NEW ORLEANS
HENRY BEER EDGAR H. BRIGHT
J. WILLIAM BARKDULL C. MORGAN ABRAMS
MEMBERS OF
New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade
Associate Members of the Liverpool Cotton Association
Private Wires to Principal Points

HUGHES FAWCETT
IMPORTER AND COMMISSION MERCHANT
LINEN YARNS
For Weaving, Knitting and all Purposes
TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth
Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine
115 Franklin Street, : NEW YORK

Classified Opportunities.

WANTED—Position as Overseer of Carding in a large mill. Can furnish good references, and come on short notice. Address Box No. 5, care COTTON.

WANTED—Position as superintendent or overseer of knitting. An experienced knitting mill man, 35 years old and married. Has had 13 years experience in Southern knitting mills, 3 years as superintendent. Is specially familiar with Standard, Scott and Williams, and Banner machines in the manufacture of hosiery. Address Box 66, care COTTON, Atlanta, Ga.

POSITION WANTED as superintendent or manager. A man with wide experience, over 20 years in many large Northern mills, desires position, preferably in the South. Experienced on all kinds of plain and fancy goods, cotton, silk, linen, and some wool. Have acted as purchasing agent for a number of concerns and have taken charge of the erection and organization of mills for both fine and coarse yarns, combed and carded. Capable of doing designing where necessary. Familiar with all kinds of machinery and power plants. Very best of references exchanged. Address Box 312, care COTTON.

FOR SALE

One 42" Curtis & Marble Brush Machine with 4 card Brushes and 2 Bristle Brushes.

ALSO One Single Cylinder Lowell Slasher, 52" wide with Single Cylinder 7' in diameter, and Creel Stands for 8 Section Beams.

ALSO One Double Suction 28" Centrifugal Pump direct connected to Steam Engine Marine type 6" x 6".

All of the above machinery is in the very best of condition.

Cocker Machine & Foundry Co.
Gastonia, N. C.

CHEESE-CLOTH MANUFACTURERS

should write, indicating their ability to handle orders on 22 x 18 cheese-cloth for a concern using large quantities. Address Box 29, care COTTON.

WANTED
Children's Hosiery.

An inquiry has been received for 1,000 cases of children's ribbed hose in sizes 5 to 10, at a price of 85 cents to 87½ cents a dozen. Any mill in a position to consider a proposition of this character should communicate with Box 28, care COTTON.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2,00 per inch per insertion.

Rates for larger spaces furnished on application.

APINOL

Ideal Surgical Dressing.

Powerful, Safe, Pleasant.

If your druggist cannot supply you write to us.

Send 10 or 25 cents silver for trial bottle.

WHITE CHEMICAL CO.
WILMINGTON, NORTH CAROLINA

Used Machines For Sale

F. O. B. Atlanta

One 20" x 12' Lathe.
One 32" x 12' Lathe.
Two 16" x 10' Lathe.
One 16" x 8' Lathe.
One 24" Aurora Drill Press with tapping attachment.
One new 1½" Single Head Landis Bolt Cutter.
New Marvel Power Hack Saws in stock for immediate delivery.
We can equip you in either new or used machinery. Write us.

Seeger-Walraven Company
Machinery and Mill Supplies.
38 W. Alabama St., Atlanta, Ga.

FOR SALE

63 Crompton & Knowles looms; 33 inch reed space 4 x 1 box motion. Equipped with Crompton & Knowles, sixteen Harness Double index, two weave multiplier dobbies. Looms are in first class condition and the dobbies are practically new. Will sell for $50.00 each or will consider cash offer for the lot.

Address
HUGHES FAWCETT,
115 Franklin Street, New York

CHEAP BOILER

60 H. P. Horizontal Tubular

CHEAP ENGINE

25 H. P. Horizontal, 10" x 12", throttling.

FOR SALE BY

COLUMBIA CLAY COMPANY
COLUMBIA, S. C.

New and Second Hand

ENGINES
Corliss Automatic and Slide Valve

BOILERS
Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS
Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING
Planers, Molders, Band Saws, etc.

ELEC. MACHINERY
Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,
127-31 N. Third St.
Philadelphia, - Pennsylvania

Liquid Chlorine
Simpler and Easier to Handle
Liquid Chlorine, the new Bleaching Agent, is far simpler and easier to handle than the old bleaching powder method. It is a n cer, cleaner, more efficient and scientific method. No material changes in your present method of bleaching are necessary to adopt this new agent. It comes in steel cylinders. The cylinders are provided with valves which when opened allow the chlorine to escape in the form of gas, and this gas dissolves completely into a clear
100% Bleaching Agent
Yarns and cloth bleached with Liquid Chlorine have a much softer feel and a positive increase in the tensile strength of the goods is obtained. Less acid (or sour) is required, which eliminates tendering and also results in a large saving in the amount of wash water required. No odor is left in the goods.
Liquid Chlorine is more economical, and you save on freight charges also as 1 pound of Liquid Chlorine is equal to 4 or 5 pounds of bleaching powder.
Let us demonstrate Liquid Chlorine in your own mill. Just ask us to send a man.
Write today for booklet
Electro Bleaching Gas Company
18 East 41st Street NEW YORK CITY

STANDARD ANILINE PRODUCTS, Inc.

BETA NAPHTHOL
PARANITRANILINE
MONO SULPHONIC ACID
SULPHUR BLACK
SULPHUR BLUE
LAKE SCARLET
LAKE ORANGE
BISMARCK BROWN
WOOL SCARLET
WOOL ORANGE
WOOL YELLOW
CHRYSOIDINE
SODIUM ACETATE
FUR DYES.

SAP
TRADE MARK REGISTERED
MADE IN AMERICA

Other cotton colors in preparation

General Offices, 366-5th Avenue, New York
WORKS: WAPPINGERS FALLS, NEW YORK

Better Results from Your Equipment

YOU may have been doing your work week after week in the same way, believing that you were getting the best possible results. But this is a mighty swift age and new methods of doing things are being invented day after day—methods which help you get better results from your boiler, your engine, your entire equipment.

These are methods you should know about—they are always advertised and in such a way that it's a rare advertising page that will not yield one good suggestion to you.

Suppose you read the advertising pages of this issue thoroughly and see how many methods suggest themselves to you by which you could make a much better showing, by which you could save time and expense—then act.

STARCH

Textile Starches

In the manufacture of cotton goods a great deal depends on the proper use of starch. It is impossible to have good weaving and high production unless the warps are properly sized.

We have made a scientific study of the use of starch both by laboratory research and practical tests in the mills. As the result of this work we have determined what kind of starch produces the best results on the different classes of goods and we are now able to offer to the trade SPECIAL TEXTILE STARCHES adap ed to every requirement of manufacture.

We are prepared to study your problems and show you how to obtain the best results on the particular class of goods you are making.

For Information Address

Corn Products Refining Co.

New York, N. Y.

Southern Office
Greenville, S. C.

STARCH

Make Your Bleach Out of Salt Water

WE manufacture a number of different types of cells for this purpose. All you require besides this is direct current of electricity and salt water.

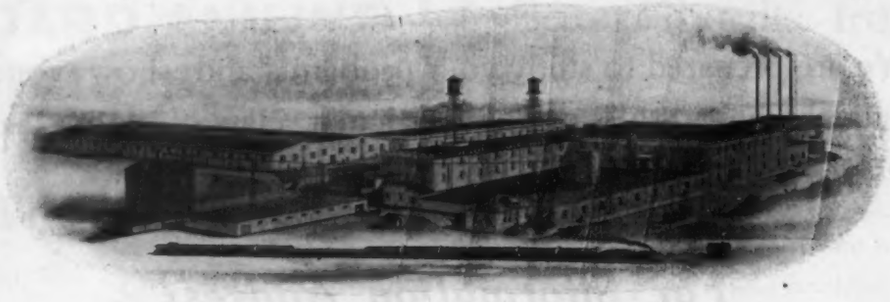
Write for additional information.

Electro Chemical Company,

Formerly

National Laundry Machinery Co.

Dayton, Ohio, U.S.A.



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAS. H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

MADE IN U. S. A.

SOLUBILITY BRILLIANCY

HOLLAND ANILINE CO.
118 W. Kinzie Street
CHICAGO

METHYL VIOLET
METHYLENE BLUE
BISMARCK BROWN

Works:
HOLLAND, MICH.

CONCENTRATION

Caustic Soda	Cocoanut Oil
Soda Ash	Olive Oil
Caustic Potash	Olive Oil Foots
Aniline Oil	Palm Oil
Carbonate of Potash	Soya Bean Oil
	Castor Oil
Bichromates	Cotton Seed Oil
Chlorates	Red Oil
Prussiates	Etc., Etc., Etc.

B. BROWN & BRO.

280 Broadway
NEW YORK, N. Y.

Philadelphia Branch:
DREXEL BUILDING Telephone, Lombard 2186
San Francisco:
340 SANSOME ST., Dough. 3332

Soluble Grease

To make the stock, yarn or warps Run Smooth, regardless of dyes that make the Cotton Fibre harsh.

BOSSON & LANE
ATLANTIC MASS.

KALI HYDROXY OIL
AMERICAN MADE

A Clear Solution in Hot or Cold Water.
Makes No Emulsion.

For Softening Finishing and Use in Dye Bath

K TRADE MARK AL I C

Alizarine Assistant

Boiling Out Cotton Goods, Etc.

Manufactured by

KALI MANUFACTURING CO.
1406-08-10 N. Front St., PHILADELPHIA.

Manufacturers of Kali Chlorine Neutralizer to prevent tender Bleached Goods.

Kali Sulphantine to prevent tendering of Goods Dyed with Sulphur Colors.

AMERICAN DYES FOR AMERICAN DYERS

DYES and CHEMICALS

THE NEW QUICK ACTING

"CHROMOSOL" COTTON MORDANT

FOR USE WITH EXTRACT COLORS

KHAKI FOR COTTON

MARDEN, ORTH & HASTINGS CO., Inc.

(Established 1837)

BOSTON, 225 Purchase St.
SAN FRANCISCO, 316 Clay St.
61 Broadway, NEW YORK
130 N. Fifth Ave., CHICAGO
Rockefeller Bldg., CLEVELAND

National Aniline & Chemical Co.

100 WILLIAM ST., NEW YORK

AMERICAN ANILINE COLORS TRADE MARK

MANUFACTURERS OF

Aniline Colors and Coal Tar Products

IMPORTERS OF

Dyestuffs, Chemicals, Gums, Etc.

OFFICES AND WAREHOUSES:

NEW YORK
BOSTON
HARTFORD
CINCINNATI
KANSAS CITY
PHILADELPHIA
PROVIDENCE
CHICAGO
MILWAUKEE
MINNEAPOLIS
CHARLOTTE, N. C.

WORKS:

SCHOELLKOPF ANILINE & CHEMICAL WORKS, Inc., Buffalo, N. Y.

ANILINE COLORS AND DYEWOOD EXTRACTS

Walter F. Sykes & Co., IMPORTERS
Main Office:
85 Water St., New York
Branches:
113 Broad St., Boston 132 Chestnut St., Philadelphia
Paterson, N. J.

THE CHEMICAL COMPANY OF AMERICA, INC.
MANUFACTURERS OF
INTERMEDIATES
COLORS
and
MILL SUPPLIES
NEW YORK OFFICE: 28 PLATT STREET FACTORIES: SPRINGFIELD, N. J

MILL SUPPLIES
Caustic Soda, Soda Ash,
Caustic Potash, Carbonate of Potash,
Chlorates, Bichromates,
Chloride of Lime, Cocoanut Oil,
Soya Bean Oil, Palm Oil,
Olive Oil Foots.
Frederick H. Cone
176 Front Street NEW YORK

FORMEN
TRADING CO.
Dyewood Extracts,
Chemicals
Everything for the Trade
NEW YORK
6 Church Street
PHILADELPHIA
Drexel Building

JACQUES WOLF & CO., Passaic, N. J.
Sizings and Finishing Products for Cotton, Wool and Silk. All Sulphonated Castor Oils.
MONOPOLE OIL. U. S. Patent No. 861397.
New York Office, 100 William Street.
Western Representative, United Indigo & Chemical Co., Ltd., 218 West Kinzie St., Chicago, Ill.

Remember—
that the small space prevents advertisers on this page from telling their whole story, but if you will just drop them a line they will gladly send full data.

GUMMED TAPE AND MOISTENING MACHINES
ESPECIALLY PREPARED FOR
SLASHER MACHINES
WRITE US FOR PRICES AND SAMPLES.
PAPCO PAPER PRODUCTS CO., ATLANTA, GA.

WATER SOFTENING OR FILTRATION
FOR BOILER FEED AND ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

SULPHUR BLACK

4-5% Standing Bath

Paste or Powder

and DIRECT BLACK

Without exception the best American made dye products in the market for use by the cotton industry.
Satisfaction guaranteed.
Prompt shipment or will contract for total requirements for delivery at stated periods during the next 12 months.

Send for prices and Samples.

Phoenix Dye Products Corporation

Dept. A. 292 11th Ave., New York.

Aniline Dyes
Dyewood Extracts
AND ALL
Textile Chemicals

Baltic Chemical Co.

PHONE WORTH 4142 4143 4144
183 Duane St. New York
Works: YONKERS, N. Y.

For Forty Five Years

The Leading Distributors of Dye Stuffs, Chemicals, Sulphonated Oils, especially adapted for the Textile Industry.

Send for Book of Specialties

A. Klipstein & Company, New York City

Southern Office: Charlotte, N. C.

Indigo Extract
Natural Indigo

For Cotton and Wool Dyeing.

DYESTUFFS and CHEMICALS

Write for samples and prices

James C. Gismond & Co., Inc.

97 Water St., New York.

TELEPHONE
RECTOR 8840, 6662

CABLE ADDRESS
MADEROBRO

Madero Bros.

Incorporated

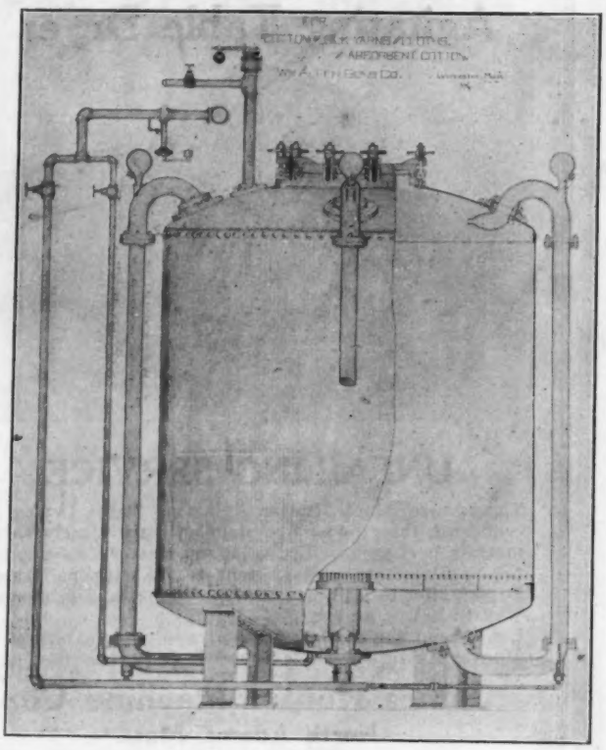
Chemical Dept.

115 Broadway, New York

QUEBRACHO EXTRACT
LOGWOOD EXTRACT
SOLID LOGWOOD
FUSTIC EXTRACT
HEMATINE CRYSTALS
ANILINE DYES

SODA ASH
CAUSTIC SODA
BLUE VITRIOL
CHLORIDE OF LIME
SULPHURIC ACID
NITRIC ACID
MURIATIC ACID
AMMONIA
CHLORATE OF POTASH
MURIATE OF POTASH
ALL OTHER CHEMICALS
BICHROMATE OF SODA
BICHROMATE OF POTASH
CITRIC ACID
TARTARIC ACID
TANNIC ACID

ALLEN PATENT KIERS



"Allen" Injector Kier
As illustrated
"Allen Worcester" Kier
Electric Driven Circulator and Indirect Heater.
"Allen Hydraulic" Kier
For Raw Stock. Unloaded in 30 minutes.

The following is an extract from letter from a large mill that recently installed **"Worcester" Kiers.**

"We note that in the new type kiers the liquor can be brought to a boiling point very much quicker than in the old type, thereby saving considerable time in the boil-off."

This new kier is mechanically correct, no live steam is admitted to the kier.

Absolutely uniform results are secured with less consumption of steam.

Let us show you how you can improve on your present system. Write us.

Logwood Extractor for Extracting the Coloring Matter from Logwood Chips.

Worcester Steam Boiler Works

Wm. Allen Sons Co., Prop.
Worcester, Massachusetts

DELAHUNTY DYEING MACHINE COMPANY

ESTABLISHED 1880

Manufacturers of Textile and Mining Machinery

Revolving Cylinder Raw Stock Dyeing and Bleaching Machines
Revolving Cylinder Hosiery Dyeing and Bleaching Machines
Hosiery, Oxidizing, and Tom Tom Machines.
Circulating Type Raw Stock Dyeing and Bleaching Machines
Circulating Type Beam Dyeing Machines for Dyeing
Cotton Warp on Beams, 1 to 12 Beams in One Operation

Special Machines for Aniline, Sulphur, Indigo, and Other Vat Colors

OFFICE AND WORKS, PITTSTON, PA., U. S. A.

THE BAYER COMPANY, INC.

117 Hudson Street, NEW YORK
Manufacturers and Importers of

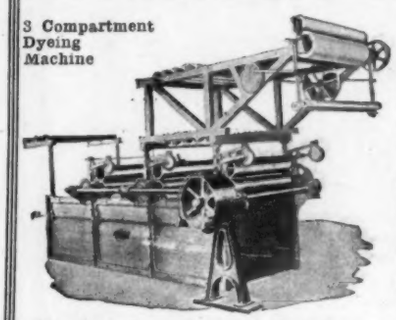
Aniline, Alizarine and Algol Colors

SPECIALTIES—For Cotton Khaki (Government Work) ALGOL Colors, also Direct and Sulphur Colors.

Importers of the Products Manufactured by

FARBENFABRIKEN VORMALS FRIEDR. BAYER & CO.
Leverkusen, near Cologne on Rhine, Germany.

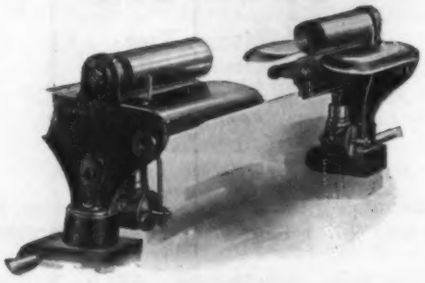
3 Compartment Dyeing Machine



THIS MACHINE is built for dyeing chain warps, piece goods, bleaching warps in continuous process, for boiling-out, or boiling-out and dyeing combined. Our machines are not surpassed in design, workmanship and material. They are used in some of the greatest mills. Our location makes for economy in production and therefore low cost. Bulletin on request.

SALEM IRON WORKS
326 So. Liberty St., Winston-Salem, N. C.

BUTTERWORTH



Textile manufacturers who are giving increased consideration to costs, should investigate the "Foxwell" Pneumatic Guider and Feeder for tentering, drying and other finishing machines.

It saves a man, economizes floor space, increases output and improves quality. Trial installation on approval.

Write for catalog stating fabric and finishing required.

H. W. BUTTERWORTH & SONS CO.

Established 1820

PHILADELPHIA

PROVIDENCE OFFICE
Turk's Head Building

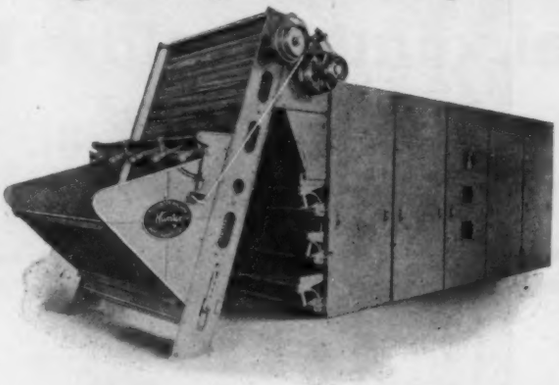
FINISHING
Butterworth
MACHINERY

31

FINISHING MACHINERY

The Hunter

Agitating Table Dryer



UNFAILING SERVICE

The service which Hunter Agitating Table Dryers are rendering their owners approaches very closely to the mark of perfection. Unfailing, no matter how exacting the requirements, and efficient to the extreme, Hunter Dryers offer to mill men the most direct and economical way to better and larger output.
Let us send you our latest Bulletin—every feature of the Hunter Agitating Table Dryer is fully described in it.

James Hunter Machine Co.,
North Adams, Mass.

BEAM DYEING

That beam dyeing is the most efficient and most economical method for weaving mills is proven in the fact that nearly all dyeing machine improvements are in that direction.

The Morton Beam Dyeing Machine was first and has the largest number of satisfied users.

Recent improvements of The Morton Beam Dyeing Machine have perfected the beam dyeing process.

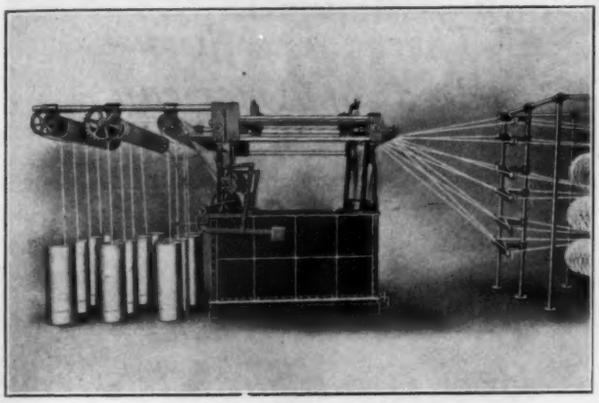
Complete information about beam dyeing and The Morton Beam Dyeing Machine will be furnished on request.

Columbus Truck & Supply Mfg. Co.
Columbus, Ga.

COCKER

Single Compartment

WARP DYEING MACHINE



THE above cut illustrates our SINGLE COMPARTMENT WARP DYEING MACHINE, with all iron box, inside dimensions of box 6 feet long, 40 inches wide and 34 inches deep, with overhead of all iron construction. Self contained with machine and Creel of Pipe construction for carrying Ball Warps.

These machines are also furnished with iron frame cypress lined boxes, with any number of compartments and equipped with either Cam or Folder delivery.

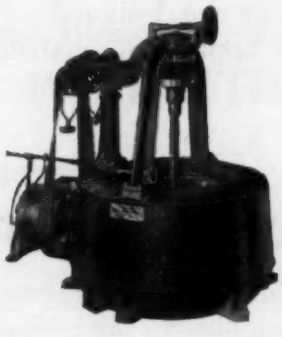
Write today for full information and prices.

Cocker Machine & Foundry Co.

Builders of Warpers, Reamers and Warp Dyeing Machinery

GASTONIA, N. C.

TOLHURST SELF-BALANCING EXTRACTOR



Patented adjustable idlers permit of Countershaft, Engine or Motor drive.

Ask for catalogue.

Tolhurst Machine Works

TROY, N. Y.

Sou. Agt. - - Fred H. White, Realty Bldg.. Charlotte, N. C.
West. Rep. - - John S. Gage, Hartford Bldg., Chicago. Ill.
N. Y. Rep., - - Fred A. Tolhurst, 106 Central Park W. N. Y. C.
Canadian Agt., - W. J. Westaway, Sun Life Bldg., Hamilton, Ont.

"Proctor" Dryers do their work efficiently day in and day out because they are practical in design and unusually substantial in construction.

Every detail is better than "just good enough."

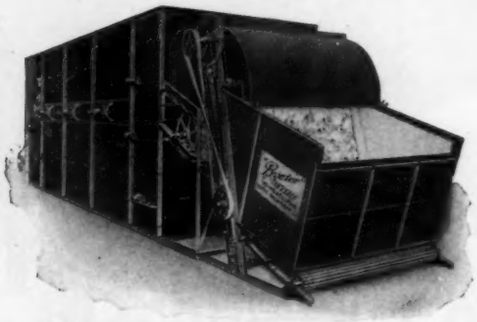
Illustrated Catalog on request.

The Philadelphia Textile Machinery Company

Philadelphia

Providence, R. I. Howard Building
Chicago, Ill. Lytton Building

Charlotte, N. C.
H. G. Mayer—Realty Building



The "Proctor" Automatic Dryer for raw stock with 3-conveyors (one above the other) dries as much as a single conveyor machine nearly three times as long, and requires no more power.

7-2

THE BELL HOSIERY MILLS
INCORPORATED
MANUFACTURERS OF
HIGH GRADE HOSIERY

SUFFOLK, VA., March 3rd, 1916

Mr. H.C.Mayer,
Charlotte, N.C.

Dear Sir:-

We are using one (1) Extractor, built by The American Laundry Machinery Co., and we wish to advise that this machine has been in continuous operation for about three years, during which time it has given entire satisfaction, and has not cost us one cent for up-keep. We consider this a remarkable record, and should we have occasion to purchase additional Extractors, you can rest assured that we will buy the American machine.

Yours very truly
The Bell Hosiery Mills, Inc.
By Jas. P. Bell

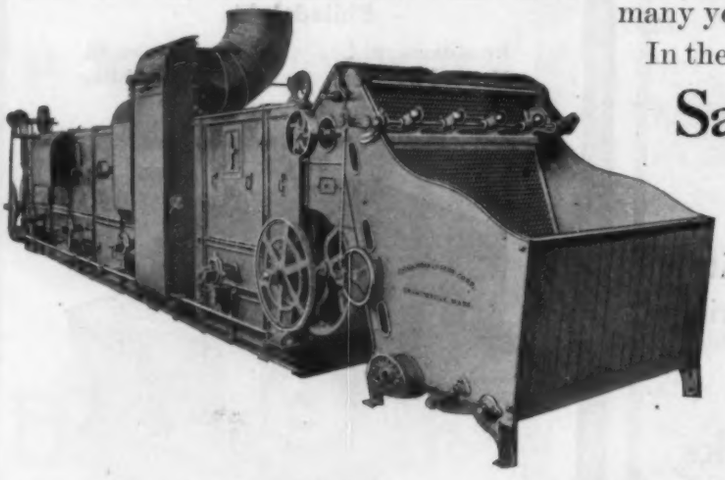
¶ There are hundreds of American Extractors in use in the textile trade and every one operated by a satisfied owner.

Here is a typical letter from a mill owner.

THE AMERICAN LAUNDRY MACHINERY CO.
Specialty Dept.
CINCINNATI

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

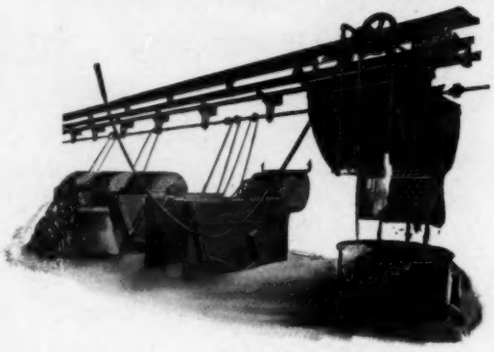
C. G. SARGENT SONS Corp., GRANITEVILLE, MASS.

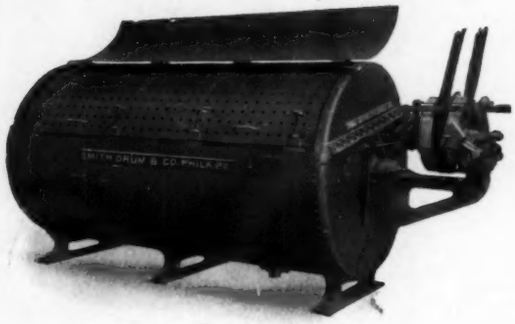
FRED H. WHITE, Southern Agent, Charlotte, N. C.

Sulphur Black Dyeing Machines

Capacities from 50 to 500 lbs. per batch.

CIRCULATING AND ROTARY TYPES





Smith, Drum & Co.

BUILDERS OF "THE BEST" LABOR SAVING DEVICES

Southern Agent
H. G. MAYER, Charlotte, N. C.

Allegheny Ave., Below 5th St.
PHILADELPHIA, PA.

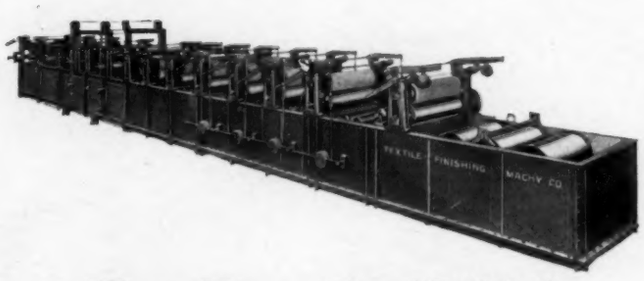
Machinery

for

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing

TEXTILE FABRICS AND WARPS

Kiers.
Skein
Mercerizing
Machines.
Mangles.



Warp Mercerizing Machine

Tenters.
Calenders.
Hydraulic
Presses.
Folders.

The Textile-Finishing Machinery Co.,

PROVIDENCE, R. I.

New York Office, 30 Church Street

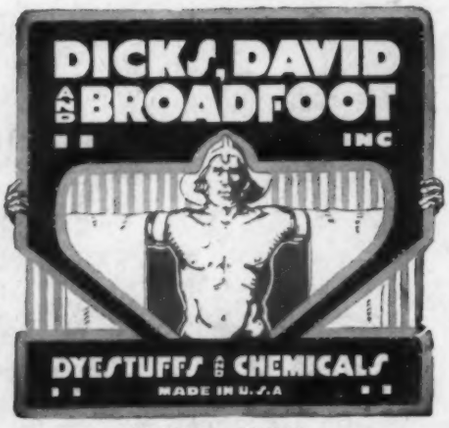
AGENT FOR

Atlantic Dyestuff Company

MANUFACTURERS OF

SULPHUR BLACK

(Powder of uniform strength—no paste)



TRADE — MARK

WE ARE ACTUAL MANUFACTURERS OF

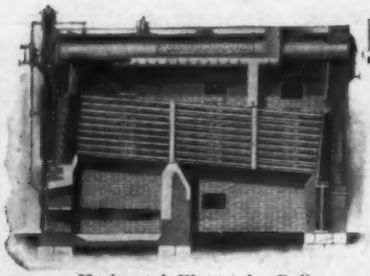
METHYL VIOLET
SULPHUR BROWN
PRUSSIAN BLUE
LOGWOOD CHIPS

Dicks, David & Broadfoot, Inc.

302-304 Broadway, NEW YORK.

Manufacturers and Exclusive Agents

DYESTUFFS AND CHEMICAL SUPPLIES



Horizontal Watertube Boiler.

THE HTCo BOILERS

STANDARD FOR THIRTY YEARS

THE CASEY-HEDGES CO.

CHATTANOOGA, TENN.

New Orleans Chicago New York Havana

The E. Howard Clock Company

Established 1842

Boston, New York and Chicago

Makers of

CLOCKS OF EVERY DESCRIPTION

Write for Factory Catalog.

FPCo

FRANKLIN PROCESS COMPANY

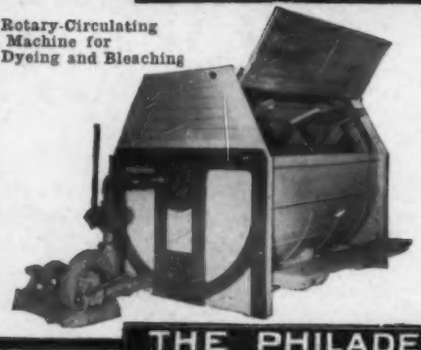
291 Promenade Street, PROVIDENCE, R. I.

Machinery for dyeing yarns wound on parallel tubes.

Installations in Riverside and Dan River, Gibson Mfg. Co., Patterson Mills and others.

"HURRICANE" DYEING, DRYING AND FINISHING MACHINERY. PRESSES. ETC.

Rotary-Circulating Machine for Dyeing and Bleaching



"Showing a Nice Saving in Dyestuffs and Labor."

"We have been running this machine for over thirty days and are much pleased with the results obtained.

"We are dyeing Sulphur Black and are rinsing and softening in the machine and so far have not had a bronzy dyeing. Aside from this the machine is showing a nice saving in dyestuffs and labor."

(Signed) THE DES MOINES HOSIERY CO.
Des Moines, Iowa

Send for Illustrated Catalog.
State Kind of Dyeing and Quantity.

THE PHILADELPHIA DRYING MACHINERY CO.
6721 GERMANTOWN AVE., PHILADELPHIA, PA.